

F.O.I.A.

JULIUS ROSENBERG ET AL.

FILE DESCRIPTION

HQ

FILE

SUBJECT

Brothman

FILE NO.

100-365040

VOLUME NO.

5

SERIALS

304

460

NOTICE

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File No: 100-365040

Re: Brockman

Date: _____
(month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages		Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
			Actual	Released	
434	11/25/50	Ny let HQ	1	1	
435	11/16/50	Parsons memo to Harbo	4	4	
435	11/20/50	HQ let NY	1	1	
436	10/25/50	Ny let HQ	1	1	
437	11/17/50	Ny TT HQ	1	1	
438	10/28/50	London let HQ	5/4	1/2	b1
438	11/1/50	HQ let NY	1	1	
439	11/29/50	Ny let HQ	1	1	
439	12/2/50	Demrich memo to Belmont	1	1	
439	12/13/50	HQ let USA	1	1	
440	11/29/50	Ny let HQ	1	1	
NR	11/20/50	NH TT NY	1	1	

23 17 4 0 0 0
rev rel deny ref presumed preproc

File No: 100-365040

Re: Brothman

Date: _____
(month/year)

Serial	Date	Description (Type of communication, to, from)	No. of Pages		Exemptions used or, to whom referred (Identify statute if (b)(3) cited)
			Actual	Released	
441	11/16/50	NY TT HQ	1	1	
442	11/21/50	WFO TT HQ	2	0	2 ref navy
443	11/22/50	BS TT HQ	1	1	
444	11/17/50	NY TT HQ	1	1	
445	11/21/50	Belmont memo to Ladd	1	1	
446	11/21/50	Belmont memo to Ladd	1	1	
447	11/14/50	Incoming let	1/2	0	b1
447	11/18/50	HQ let NY	1	1	b1
448	11/19/50	NK TT HQ	4	4	b1
449	11/20/50	NK TT HQ	1	1	
450	12/8/50	WFO rept HQ	6	2	4 ref to maritime admin & navy b1
451	11/28/50	BK rept HQ	3	3	

25 16 3 6 0
nr ne deny ref presumed prepwr

1
JUN 22 05 14 20
SHE ALSO REMEMBERS TELEPHONING BROTHMAN AND TELLING HIM THAT SHE WANTED
TO SEE HIM. WHEN SHE SAW HIM, SHE GAVE HIM ADDITIONAL DIRECTIONS FROM
GOLOS FOR MEETING HIS NEW CONTACT. BENTLEY HAS NO FURTHER INFO ON
ARRANGEMENTS WITH BROTHMAN FOR MEETING HIS NEW CONTACT.

SCHEIDT

END

ACK PLS

NY R 3A THRU 5A WA MW

Called Laboratory

M. *[Signature]*
By *[Signature]*

cc: Mr. Belmont
Mr. L. J. [unclear]

FEDERAL BUREAU OF INVESTIGATION
U. S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

OCT 26 1950

TELETYPE

all
all ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 4/6/87 BY 304 SPWT/IMW

WASHINGTON 21 AND NEW YORK 5 FROM NEWARK

26

DIRECTOR AND SAC

DEFERRED

ABRAHAM BROTHMAN, ESPIONAGE R. REBUTEL OCTOBER TWENTYTHIRD LAST.

MRS. JEAN MIEMASECK WAS RECONTACTED AND STATED THAT A THOROUGH SEARCH OF
HER EFFECTS WAS MADE AND SHE FAILED TO LOCATE THE NOTES WHICH SHE THOUGHT
SHE HAD RETAINED IN CONNECTION WITH THE DICTATION SHE TOOK FROM BROTHMAN
AND GOLD. SHE BELIEVES SHE MUST HAVE DESTROYED OR DISCARDED THESE NOTES
IN VIEW OF THE TIME WHICH WAS ELAPSED SINCE THE INCIDENT OCCURRED.

RUC.

MC KEE

END 58 NOV 6 1950

QA NWK RK21 WA GAHAR
NK R B NY JJC
NH WILL PLS HOLD MIN

Mr. Tolson	_____
Mr. Ladd	_____
Mr. Clegg	_____
Mr. Glavin	_____
Mr. Nichols	_____
Mr. Rosen	_____
Mr. Tracy	_____
Mr. Harbo	_____
Mr. Belmont	_____
Mr. Mohr	_____
Tele. Room	_____
Mr. Nease	_____
Miss Gandy	_____

8-15 PM

RECORDED - 47
INDEXED - 47

OCT 28 1950

EX-29

FAVE

cc: *[Handwritten signature]*

OCT 26 1950

ALL INFORMATION CONTAINED
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DATE 4/6/87 BY 3042 PWT/lmw

TELETYPE

Mr. Tolson	
Mr. Ladd	
Mr. Clegg	
Mr. Glavin	
Mr. Nichols	
Mr. Rosen	
Mr. Tracy	
Mr. Harbo	
Mr. Belmont	
Mr. Mohr	
Tele. Room	
Mr. Nease	
Miss Gandy	

WASH 16 NYC 2 FROM LOS ANGELES 26 4-40 PM

DIRECTOR, SAC URGENT

ABRAHAM BROTHMAN, ESPIONAGE DASH R. RE NEW YORK TEL DATED
OCT. TWENTYFOUR LAST. MILLICENT GERSON LESSER ADVISED THIS
DATE SHE WAS INTRODUCED TO ABRAHAM BROTHMAN AND MIRIAM MOSKOWITZ
IN THE FALL OF FORTYSIX BY HER BROTHER, ROBERT GERSON. INTRO-
DUCTION OCCURRED AT BROTHMAN-S OFFICE. DENIED HAVING ANY
ASSOCIATION WITH BROTHMAN OR MOSKOWITZ. DENIED EVER HAVING
CORRESPONDED WITH BROTHMAN OR MOSKOWITZ BUT MAY HAVE WRITTEN HER
BROTHER AT ABRAHAM BROTHMAN AND ASSOCIATES IN FORTYSEVEN. DENIES
ANY KNOWLEDGE OF ESPIONAGE REGARDING BROTHMAN, MOSKOWITZ, OR HARRY
GOLD. STATES SHE WAS INTRODUCED TO GOLD BY HER BROTHER AND MET HIM
AT A LABORATORY ON LONG ISLAND. ASSOCIATION WITH BROTHMAN, MOSKOWITZ,
AND GOLD WAS LIMITED TO INTRODUCTION TO THEM. MILLICENT GERSON
STATES SHE WAS IN SAN FRANCISCO AND PALO ALTO, CALIFORNIA, IN JAN.
OF FORTYSIX. RECALLS VISITING HER SISTER, ROSALIND, WHO WAS EMPLOYED
AT CBS IN SAN FRANCISCO. DOES NOT RECALL ANY TELEPHONIC CON-
VERSATION WITH MIRIAM MOSKOWITZ AND DOES NOT REFER TO HERSELF
AS MILLY. DENIES MEMBERSHIP IN THE CP AND DOES NOT RECALL BEING ASKED
TO JOIN THE CP.

HOOD

END

58 NOV 6 1950

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EX-29

CC: me [signature]

Trans to NYC

REPORT
of the

7-1



FEDERAL BUREAU OF INVESTIGATION
WASHINGTON D. C.

SPECIAL DELIVERY

October 30, 1950

SAC, New York

There follows the report of the FBI Laboratory on the examination of evidence received from your office on October 26, 1950.

ABRAHAM BROTHMAN
Espionage - R

John Edgar Hoover, Director

YOUR FILE NO. 100-95068
FBI FILE NO. 100-365040
LAB. NO. D-123344 - 118

Examination requested by: New York

Reference: Letter dated 10-25-50

Examination requested: Document

ALL INFORMATION CONTAINED
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DATE 4/6/87 BY 3042 PNT/1mw

Specimens:

Envelope No. 2:

Qc2 Photostatic copies of three sheets of paper bearing handwriting beginning "Operations 1. Pri charged with...."

Envelope No. 3:

Qc3 Photostatic copies of 11 pages of handwritten notes and hand-drawn figures on legal size paper.

Qc4 Photostatic copy of a sheet of ruled paper with the number 3 in the upper right hand corner and notations beginning "2. according to Trinks...."

Qc5 Photostatic copy of a sheet of ruled paper entitled "Notes on Computations."

Qc6 Photostatic copies of four sheets of paper bearing the numbers 16, 17, 18 and 19 in the upper right hand corners.

Qc7 Photostatic copy of a sheet of paper with the number 7 on top containing typewriting and handwriting beginning "2. for the flange load...."

Envelope No. 7:

Qc8 Photostatic copies of a series of handwritten notes on pages numbered 5 through 16, inclusive, on the letterhead of the Delwyn Chemical Corporation.

Envelope No. 8:

Qc9 Photostatic copies of sheets of paper numbered 1 through 4 beginning Thesis: - to develop analytically, a...."

Page 1

HLD:mdp

Continued next page

OCT 30 1950
COMM-FBI

Tolson
Ladd
Clegg
Glavin
Nichols
Rosen
Tracy
Harbo
Belmont
Mohr
Tele. Rm.
Nease
Gandy

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Laurel

FILE

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ICE

Qc10 Photostatic copies of sheets of paper numbered 17 through 25 beginning "Hence, we may write...."

Qc11 Photostatic copy of a paper on which appear what seem to be chemical equations, bearing the numbers 1 through 6 at the top.

Qc12 Photostatic copies of two papers on which appear what seem to be chemical equations.

Envelope No. 145

Qc13 Photostatic copies of 14 pages of handwritten notes on graph paper entitled "HENDRICH continuous Method For Duna-S Manufacture."

Qc14 Photostatic copies of 18 pages of handwritten notes that appear to be a continuation of the information listed on the graph paper, Qc13 above.

Qc15 Two photostatic copies of a two-page typewritten document entitled "NOTES ON CONTINUOUS METHOD REPORT."

Result of Examination

It was concluded that the handwriting on specimens Qc2, Qc3, Qc5 through Qc10 and the corrections on lines 1, 9 and 11, page 36 of Qc14 were written by HARRY GOLD. The known handwriting of HARRY GOLD appears on specimen K2 in this case, on specimen K2 in Bureau file #65-57449 and on K26 and K27 in Bureau file #65-57443.

No conclusion could be reached whether the handwriting on specimens Qc4, Qc11 through Qc13 and the handwriting on Qc14 (except the corrections entered on page 36) were written by ABRAHAM BROTHMAN, because the known writing of BROTHMAN available for comparison is inadequate.

If a further comparison is desired in connection with this case, it will be necessary to submit additional known writing of ABRAHAM BROTHMAN which is comparable with the questioned writing on Qc4 and Qc11 through Qc14.

It is noted in the referenced letter that you suggest that photographic exhibits of the writing in this case be prepared for possible use in BROTHMAN's trial. In this connection, it is noted that the specimens submitted are all photostatic copies. In view of the fact that photographic enlargements made of photostats are not as clear as enlargements made of original documents, it is suggested that the original documents be submitted to the Laboratory, if they are obtainable, in order that photographic negatives can be prepared for making the necessary enlargements. If the original documents are not obtainable, the enlargements will be made from the photostatic copies submitted. You are requested to immediately advise the Bureau whether the original specimens will be submitted.

Inasmuch as there are more than eighty separate pages included with specimens Qc2 through Qc15, photographic enlargements will be made only of representative portions of each of the groups of writing comprising the questioned specimens. However, if there are any pages of writing included with any particular specimen which are especially pertinent, you should advise the Bureau so that enlargements can be made of the writing on these pages.

The evidence is retained.

FEDERAL BUREAU OF INVESTIGATION
U. S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

OCT 24 1950

Mr. Tolson	_____
Mr. Ladd	_____
Mr. Clegg	_____
Mr. Glavin	_____
Mr. Nichols	_____
Mr. Rosen	_____
Mr. Tracy	_____
Mr. Harbo	_____
Mr. Belmont	_____
Mr. Mohr	_____
Tele. Room	_____
Mr. Nease	_____
Miss Gandy	_____

ALL INFORMATION CONTAINED TELETYPE
HEREIN IS UNCLASSIFIED
DATE 4/6/87 BY 3040 PWT/lmw

WASHINGTON 50A FROM NEW YORK 24 855 P

DIRECTOR URGENT

ABRAHAM BROTHMAN, WAS. MIRIAM MOSKOWITZ, WAS. ESP - R. REBUTEL OCT TWENTYTHIRD LAST. INTERVIEWS WITH BROTHMAN-S EMPLOYEES, FORMER EMPLOYEES AND ASSOCIATES, AS SET OUT REP SA GEO. P. DILLARD, MAY TWENTYTWO LAST AT ATLANTA, AND IN ALBANY LET JUNE SEVEN LAST, AND BALTIMORE LET MAY NINETEEN LAST, ARE CONTINUING. TO DATE, NO PERTINENT INFO HAS BEEN OBTAINED TO SHOW ESPIONAGE ACTIVITIES OF BROTHMAN OR TO SUBSTANTIATE ALLEGATIONS OF HARRY GOLD RE HIS AND BROTHMAN-S TESTIFYING BEFORE FORTYSEVEN GRAND JURY. ISADORE HALPERIN, MENTIONED PAGE SIXTEEN OF AGENT DILLARD-S RPT, IS DEAD. BERNARD KOOPMAN, MENTIONED ON PAGE EIGHTEEN OF SA DILLARD-S RPT, IS PROFESSOR AT COLUMBIA UNIVERSITY. BUREAU PERMISSION IS REQUESTED TO INTERVIEW HIM. IT IS THOUGHT MORE LOGICAL THAT QUOTE, SYL, UNQUOTE, MENTIONED IN SHORTHAND NOTES OF MIRIAM MOSKOWITZ, IS IDENTICAL WITH HER BROTHER SYLVAN MOSKOWITZ AND NOT WITH CY SILVERSTEIN AS SUGGESTED BY BUREAU. QUOTE, MILLIE, UNQUOTE, MENTIONED REP SA FRANCIS J. GALLANT, SEPT NINETEEN, FORTYNINE, AT NYC, HAS NOT BEEN POSITIVELY IDENTIFIED. THIS INDIVIDUAL NOT BELIEVED IDENTICAL WITH MILLICENT GERSON LESSER AS AEA PSQ FORM INDICATES SHE WAS EMPLOYED IN CALIFORNIA FROM SEPT, FORTYFIVE TO SEPT, FORTYSIX, AND

END PAGE ONE

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OCT 28 1950

UNRECORDED COPY FILED IN 100-370679

PAGE TWO

CONTACT WITH MIRIAM MOSKOWITZ BY UNKNOWN ~~MILLIE~~ OCCURRED JAN TWENTYTWO, FORTYSIX. HOWEVER, NO OTHER MORE LOGICAL SUSPECT EXISTS. MRS. LESSER REPORTEDLY RESIDES THREE NINE SIX THREE WILTON PLACE, LOS ANGELES. LA REQUESTED BY SEPARATE TEL TO INTERVIEW HER REGARDING SUBJECTS. LA ALSO REQUESTED TO DETERMINE DURING INTERVIEW WHETHER SHE WAS VISITING NYC JAN TWENTYTWO, FORTYSIX. FOR INFO BUREAU, MILLICENT IS SISTER OF ROBERT GERSON AND NOT HIS DAUGHTER.

SCHEIDT

END

WA NY R 50AM WA JAK

cc: Mr. Lamphere

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

CC-150

To: COMMUNICATIONS SECTION

ON: OCTOBER 26, 1950

NY

Transmit the following message to: SAC, NEW YORK

ABRAHAM BROTHMAN, ESP DASH R. REURTEL OCTOBER TWENTY FOUR, LAST, REQUESTING

AUTHORIZATION TO INTERVIEW BERNARD KOOPMAN, PROFESSOR AT COLUMBIA UNIVERSITY.

YOU ARE AUTHORIZED TO CONDUCT THIS INTERVIEW AS HIS KNOWLEDGE OF BROTHMAN'S

ACTIVITIES.

RECORDED

100-365040-318

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HEREIN IS UNCLASSIFIED
DATE 4/6/87 BY 3042PWT/lmw

EPE:jan 700
100-365040

NOTE: A check has been made of the main case file and references on Bernard Osgood Koopman. Koopman was born in Paris, France, on January 19, 1900, of American parents. He attended Harvard University from 1918 to 1925, receiving A.B., A.M., and Ph.D. Degrees. He was employed by the National Research Council, Washington, D. C., from 1925 to 1934, being assigned at Princeton University doing research in math. He was an instructor in Mathematics at Harvard University from 1934 to 1937. He served as a scientific analyst for the Chief of Naval Operations from February, 1944 to December, 1945. He was also a consultant with the Massachusetts Institute of Technology group at the Pentagon Building. He was appointed as a full professor in Mathematics at Columbia University in July, 1946 and is presently so employed. (116-175093)

A check of the references concerning Koopman indicated that he registered to vote the Socialist Party ticket at New York during the period from 1928 to 1935. No information as to subversive activities contained in these references other than that his second cousin, Osgood Tower, was considered to be pro-Communist. (121-23496-14)

According to Harry Gold, Brothman, who always emulated Koopman, became disgusted with his attitude when he made a derogatory remark about Dr. Klaus Fuchs subsequent to the disclosure of his arrest for espionage activities. (100-365040)

Mr. Tolson
Mr. Clegg
Mr. Glavin
Mr. Ladd
Mr. Nichols
Mr. Rosen
Mr. Tracy
Mr. Egan
Mr. Gurnea
Mr. Harbo
Mr. Mohr
Mr. Pennington
Mr. Quinn Tamm
Tele. Room
Mr. Nease
Miss Gandy

FEDERAL BUREAU OF INVESTIGATION
U.S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

OCT 26 1950

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F B I

OCT 26 1950

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Per

SERVICE UNIT
SEARCH SLIP

4-22a

Supervisor _____ Room _____

Subj: Koepman, Bernard

Exact Spelling _____ Searchers _____
All References _____ Initial _____
Subversive Ref. _____ Date _____
Main File _____
Restricted to _____

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DATE 4/6/87 BY 3042 PWT/IMN

FILE NUMBER

SERIALS

46-175093
65-58805-773 w MF
121-23496-14 I w MF
100-365040-45 173, 171, I w MF
65-57449-591 p 52; w MF
100-365040-3 p 8, 23, 25; I w MF
100-365040-57 226, p 34; I w MF
65-58805-1146 p 58, 59, 106; I w MF
100-365040-101 p 140; I w MF
Koepman, Bernard Osgood
121-23129
46-175093
65-58805-430 816, 743, I w MF

Initialed

FEDERAL BUREAU OF INVESTIGATION
UNITED STATES DEPARTMENT OF JUSTICE

To: COMMUNICATIONS SECTION.

Transmit the following message to:

OCTOBER 30, 1950

URGENT

SAC, NEW YORK

ABRAHAM BROTHMAN, ESP DASH B. REURTEL OCTOBER TWENTY SEVENTH, LAST.

LAB EXAMINER H. J. DANLON WILL REPORT NYC AT EIGHT THIRTY A.M. OCTOBER

THIRTY FIRST. YOU ARE AUTHORIZED TO TURN OVER COPY OF REPORT SA J. N.

COLLINS OCTOBER TWENTY SIXTH, LAST, TO USA, BONY.

HOOVER

EFB:jmm
100-365040

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100-365040-34

OCT 31 1950

Tolson _____
Ladd _____
Clegg _____
Glavin _____
Nichols _____
Rosen _____
Tracy _____
Harbo _____
Belmont _____
Mohr _____
Tele. Room _____
Nease _____
Gandy _____

FEDERAL BUREAU OF INVESTIGATION
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NOV 4, 1950

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FBI
RECORDS SECTION

Per JAK

Assistant Attorney General James W. McInerney

October 27, 1950

Director, FBI

ABRAHAM BROTHMAN
ESPIONAGE - R

2-16/10/51
~~CONFIDENTIAL~~

There are being transmitted herewith copies of the following reports which have been submitted in connection with this investigation:

Report of Special Agent Robert O. Jensen dated October 11, 1950, at Philadelphia, Pennsylvania.

Report of Special Agent Brenton S. Gordon dated October 17, 1950, at Boston, Massachusetts.

Report of Special Agent John E. O'Donoghue dated October 17, 1950, at Cleveland, Ohio.

Enclosure

ALL INFORMATION CONTAINED
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DATE 4/6/87 BY 3042PWT/1mw

APPROPRIATE AGENCIES
AND FIELD OFFICES
ADVISED BY SLIP(S) OF
DATE 10-21-77 BY *BOYC*

KFB:jm
100-365040

RECORDED - 43
EX-29

100-365040
NOV 1 1950

Tolson _____
Ladd _____
Clegg _____
Glavin _____
Nichols _____
Rosen _____
Tracy _____
Harbo _____
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Mohr _____
Tele. Room _____
Nease _____
Gandy _____

59 NOV 4 1950
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COMM - FBI

REC'D - INT. SEC. OFFICE

cit

Ar

Office Memorandum • UNITED STATES GOVERNMENT

TO : Director, FBI

DATE: 9-8-50

FROM : SAC, Philadelphia

SUBJECT: ABRAHAM BROTHMAN
ESPIONAGE - R
(Bufile 100-365040)ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 4/6/87 BY 3042PWT/lmw

Rebulet 8-29-50.

The results of Philadelphia investigation in determining the possible classified or restricted nature of material received by HARRY GOLD from ABRAHAM BROTHMAN are set forth in the following reports:

- ✓ 1. Philadelphia report of SA JOHN A. HEBENSTREIT dated 6-12-50.
- ✓ 2. Newark report of SA RUFUS T. TYSON dated 6-16-50.
3. Philadelphia report of SA ROBERT G. JENSEN dated 7-5-50.
- ✓ 4. Washington Field Office report of SA HOLLIS W. BOWERS, dated 7-21-50.
- ✓ 5. Philadelphia report of SA ROBERT G. JENSEN dated 7-25-50.

The material found during the search of the GOLD residence pertaining to BROTHMAN is currently in possession of the New York Office.

The New York Office has, by report dated September 1, 1950, set out leads in additional efforts to determine if the material furnished by BROTHMAN to GOLD was of classified or restricted nature.

RGJ:mtg
65-4318

cc: New York (100-95068)

EX - 83

RECORDED - 4

INDEXED - 4

100-365040-323

SEP 11 1950

3

HANDLED BY
STOP DESK

58 NOV 7 1950

Office Memorandum • UNITED STATES GOVERNMENT

TO : DIRECTOR, FBI

FROM : *guy* GUY HOTTEL, SAC, Washington Field

DATE: October 28, 1950

SUBJECT: ABRAHAM BROTHMAN, was.
MIRIAM MOSKOWITZ, was.
ESPIONAGE - R
(Bufile 100-365040)

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED

DATE 4/6/87 BY 3043 PWT/lmn
G. I. R. -1

Re New York teletype dated October 26, 1950.

The Baltimore Office is being requested to contact Major STANLEY LEVY, Chief, Production Branch of Industrial Division, Army Chemical Center, Maryland. Colonel P. A. KLEFF, Industrial Branch, Office of the Chief of the Chemical Corps, Department of Army, Pentagon, advised that Major LEVY should be able to furnish information concerning the Army's use of the magnesium powder process. He also said that Mr. LESLIE HERBERT, civilian, Army Chemical Corps, may be of assistance.

For information of Baltimore, handwritten notes on magnesium powder process were furnished to HARRY GOLD, self confessed espionage agent by ABRAHAM BROTHMAN. These notes were found during a search of GOLD's home in June, 1950.

The New York Office has requested by reference teletype that it be determined whether the ~~magnesium powder process~~ is restricted and confidential and when the Army may have classified this process. According to HENRY A. GOLWYNNE, the originator of the process, it is currently being used by the Army in the manufacture of flares.

For the information of the Baltimore office, the following concerning the magnesium powder process is taken from the summary report of Special Agent JOHN M. COLLINS dated August 15, 1950 at New York in this matter:

"The next happening that occurred was that of the magnesium powder. This concerns the production of an extremely fine magnesium powder such as is used in flares and in tracer bullets. The idea had its genesis with HENRY GOLWYNNE, who thought that magnesium powder could be produced by the following process; that is, spraying the molten magnesium into a chamber containing an inert gas such as nitrogen or helium. The spraying was to occur through extremely fine crifices or nozzles, and the magnesium would form extremely fine globules or particles in this inert atmosphere, and would fall to the bottom of the chamber containing the inert atmosphere from which it could then be continuously removed and packaged. Such a process

cc - New York
Baltimore (Special Delivery)

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100-211470

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EX-105

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Letter to Director

October 28, 1950

was a great improvement over the traditional method of producing powders from ingots whereby a series of say, eight or twelve attrition machines are set up and the particles are successively reduced smaller and smaller in size until the desired fineness is attained. There is then involved the problem of sieving out the large particles and returning them to the machines for further grinding. Also, the matter of grinding magnesium is not too happy an affair because of the danger of fire from the very small particles produced.

"It was BROTHMAN's job to design this process. I believe, it was intended for use in Australia but there may have also been the understanding that GOLWYNNE was going to try to sell this to the United States Government. Here again, BROTHMAN employed his now familiar dilatory tactics. This matter came about, that is, the magnesium powder, as a result of a process volunteered to me without any prompting on my part by ABE BROTHMAN. That is, a process which was valuable in a military sense. I believe that it may have also come about as a result of something that I may have told BROTHMAN relating to the fact that as interesting as the aerosol bomb was, it was still not too important militarily speaking, to the Soviet Union. In spite of BROTHMAN's delaying actions and promises which kept recurring, of having the whole information in one complete story ready on any one of a number of occasions, this never occurred. There have, however, been found in my home some five or six handwritten pages in my writing, concerning the magnesium powder process. This is just the beginning of the process, the preliminary calculations. There is also in my handwriting a diagram and some notations in BROTHMAN's handwriting. There has also been found some fragmentary single sheets in BROTHMAN's handwriting concerning calculations on the magnesium powder process."

Washington Field Office is continuing investigation at the Pentagon concerning this process.

Baltimore sutel results to New York.

cc - New York
Baltimore (Special Delivery)

HWB:VC
100-21170

FEDERAL BUREAU OF INVESTIGATION
U. S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

OCT 31 1950

TELETYPE

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DATE 4/6/87 BY 3045 PWT/lmn

FBI NEW HAVEN

10-31-50

7-55 PM

25745

DIRECTOR, FBI AND SAC, NEW YORK

URGENT

ABRAHAM BROTHMAN. RENTELS OCTOBER TWENTYFIVE AND OCTOBER TWENTYSIX, NINETEEN FIFTY. JOHN A. MILLS, HEAD OF AEROSOL DIV. OF BRIDGEPORT BRASS CO., BRIDGEPORT, CONN., ADVISES BROTHMAN NEVER A DIRECT EMPLOYEE OF BPT. BRASS CO. BPT. BRASS HAD CONTRACT WITH ABE BROTHMAN ASSOCIATES, ONE ONE FOUR EAST THIRTY SECOND ST., NEW YORK CITY, N.Y., FOR ONE YEAR PERIOD, JULY NINE, NINETEEN FORTYFOUR THRU JULY NINE, FORTYFIVE, WHEREBY ABE BROTHMAN ASSOCIATES RECEIVED NINE THOUSAND DOLLARS PER ANNUM. CONTRACT DATE ON BROTHMAN-S EXPERIENCE WITH LIQUID INSECTICIDE AND FREON PROPELLER WHICH IS BASIS FOR AREOSOL INSECTICIDE BOMB. AT TIME CONTRACT GIVEN TO ABE BROTHMAN AND ASSOCIATES, BRIDGEPORT BRASS ANTICIPATED RECEIVING NAVAL CONTRACTS FOR THEIR AEROSOL INSECTICIDE BOMBS WHICH NEVER MATERIALIZED IN VIEW OF WAR TERMINATION. BROTHMAN NEVER EMPLOYED EVEN AS INDEPENDENT CONTRACTOR ON ANY WORK CONSIDERED BY THE ARMED FORCES TO BE OF CONFIDENTIAL, RESTRICTED OR SECRET NATURE. PROCESS USED IN MANUFACTURING INSECTICIDE BOMB STRICTLY COMMERCIAL AND NOT IN ANY WAY SUBJECT TO ESPIONAGE. MILLS ALSO INDICATES BROTHMAN WAS EMPLOYED AS CONSULTANT DURING SAME PERIOD BY REGAL CHEMICAL CO., DOBBIN ST., BROOKLYN, N.Y., UNDER CONTRACT WITH REGAL CHEMICAL AND ABRAHAM BROTHMAN ASSOCIATES. IN THIS CAPACITY, BROTHMAN DESIGNED EQUIPMENT USED BY REGAL IN FILLING NAVY CONTRACTS FOR

END OF PAGE ONE

58 NOV 6

1950

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883 MAR 5 1963

RECORDED
INDEXED

NOV 2 1950

100-365040-325
FIVE
OR

Mr. Tolson _____
Mr. Ladd _____
Mr. Clegg _____
Mr. Glavin _____
Mr. Nichols _____
Mr. Rosen _____
Mr. Tracy _____
Mr. Harbo _____
Mr. Belmont _____
Mr. Mohr _____
Tele. Room _____
Mr. Nease _____
Miss Gandy _____

PAGE TWO

AEROSOL INSECTICIDE BOMBS. AT SAME TIME, BROTHMAN, THROUGH ABE BROTHMAN ASSOCIATES, ALSO ACTED AS CONSULTANT FOR ~~TED LEE~~ CHEMICAL CO., BROOKLYN, N.Y., UTILIZING SAME ADDRESS AS REGAL CHEMICAL CO. TED LEE CHEMICAL CO. UTILIZED BROTHMAN-S DESIGNS FOR FILLING METHYL BROMIDE AMPOLES FOR U.S. ARMY SIGNAL CORPS. METHYL BROMIDE ARE DELOUSING DEVICES WHICH WERE SOLD TO THE ARMY FOR DELOUSING INFANTRYMEN-S PACKS. MILLS INDICATES THAT SO FAR AS HE KNOWS, THIS CONTRACT INVOLVED A STRICTLY COMMERCIAL PROCESS NOT IN ANY WAY CONSIDERED CONFIDENTIAL, SECRET OR RESTRICTED. MILLS INDICATES THAT HE HAS NO INFO RE ESPIONAGE ACTIVITIES OF BROTHMAN, HARRY GOLD OR MIRIAM MOSKOWITZ. MILLS STATES THERE WAS NO OPPORTUNITY FOR BROTHMAN AT ANY TIME TO COME IN CONTACT WITH CONFIDENTIAL OR RESTRICTED OR SECRET DATA WHEN HE VISITED BPT. BRASS FOR CONFERENCE PURPOSES. BROTHMAN NEVER ACTUALLY DID RESEARCH WORK AT THE BPT. BRASS CO. FACILITIES AND WAS STRICTLY AN INDEPENDENT CONTRACTOR. MR. MILLS STATES THAT HIS LETTER TO BROTHMAN-S SELECTIVE SERVICE BOARD UNDER DATE OF JUNE SIXTEEN, NINETEEN FORTYFOUR REQUESTING BROTHMAN-S DEFERMENT WAS BASED ONLY ON THE FOREGOING RELATIONSHIP BETWEEN BROTHMAN AND THE BPT. BRASS CO. STEPHEN JANKURA, PERSONNEL DEPT., BPT. BRASS CO., BRIDGEPORT, CONN., NOT AQUAINTED WITH BROTHMAN IN ANY WAY. ADVISED LETTER DATED MARCH TWENTYSEVEN, NINETEEN FORTYFIVE, SIGNED BY HIM TO BROTHMAN-S SELECTIVE SERVICE BOARD REQUESTING BROTHMAN-S DEFERMENT WAS MADE AT REQUEST OF JOHN MILLS. JANKURA HAS NO INFO CONCERNING BROTHMAN-S ESPIONAGE ACTIVITIES OR ANY KNOWLEDGE OF ESPIONAGE ACTIVITY OF HARRY GOLD OR MIRIAM MOSKOWITZ. MEYER L. FREED OF THE MEYER L. FREED LABORATORIES, AND FORMER GENERAL MANAGER AND TECHNICAL ADVISER OF RUFERT CHEMICAL CO., DIVISION OF SEYMOUR MFG. CO., SEYMOUR CONN., ADVISED BROTHMAN WAS NEVER EMPLOYED BY THE RUFERT CHEMICAL CO. HOWEVER, IN APPROXIMATELY MAY OF NINETEEN FORTYTWO, A CONTRACT WAS NEGOTIATED

END OF PAGE TWO

FEDERAL BUREAU OF INVESTIGATION
U. S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

Mr. Tolson _____
Mr. Ladd _____
Mr. Clegg _____
Mr. Glavin _____
Mr. Nichols _____
Mr. Rosen _____
Mr. Tracy _____
Mr. Harbo _____
Mr. Belmont _____
Mr. Mohr _____
Tele. Room _____
Mr. Nease _____
Miss Gandy _____

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED

OCT 24 1950

DATE 4/6/85 BY SP4SPWT/IMW TELETYPE

CONF WASH AND WASH FIELD FROM NEW YORK 20 24 12-18 PM

DIRECTOR AND SAC URGENT

ABRAHAM BROTHMAN, WAS, MIRIAM MOSKOWITZ, ESP-R REREP SA JOHN R. MURPHY
JUNE THIRTY, FIFTY, PAGE TWELVE CONCERNING BROTHMAN COMPLETING WORK ON
TWO TYPES OF MIXERS, AN INJECTION MIXER AND A SUPER TURBINE MIXER, BOTH
COVERED BY U.S. PATENT NO. TWO TWO ONE TWO TWO SIX ONE. AUSA JOHN FOLEY
WHO IS ASSISTING IN PREPARATION OF CASE, ADVISED THAT IN BROTHMAN-S
NINETEEN FORTYSEVEN GRAND JURY TESTIMONY HE SAID IT WAS NECESSARY TO
MEET WITH HELEN TO EXPLAIN OPERATION OF MIXER TO HER. FOLEY IS DESIROUS
OF HAVING TESTIMONY AT BROTHMAN-S TRIAL FROM A CHEMIST OR CHEMICAL
ENGINEER. IT IS NOT NECESSARY FOR THIS WITNESS TO BE AN EXPERT ON
MIXING EQUIPMENT. ACCORDING TO FOLEY IT WILL BE SUFFICIENT FOR HIM
MERELY TO HAVE A GENERAL CHEMICAL BACKGROUND AND BE ABLE TO STATE THAT
THIS MIXER IS OF SUFFICIENT TECHNICAL NATURE THAT NO LAYMAN WOULD BE
ABLE TO UNDERSTAND ITS OPERATION. ACCORDINGLY WFO IS REQUESTED TO
OBTAIN COPY OF ABOVE NUMBERED PATENT AND PRESENT IT TO FBI LAB FOR
EXAMINATION. THE LAB IS REQUESTED TO HAVE THIS PATENT EXAMINED AND
FURNISH AT BROTHMAN TRIAL A WITNESS WHO CAN TESTIFY IN ACCORDANCE WITH
FOREGOING REQUEST. WFO ALSO REQUESTED TO OBTAIN NAME OF INDIVIDUAL AT
U.S. PATENT OFFICE COMPETENT TO INTRODUCE THIS PATENT INTO EVIDENCE.
WFO ALSO REQUESTED TO FORWARD COPY OF PATENT TO NYC AND IN EVENT BUREAU
HAS NO ONE AVAILABLE WHO CAN TESTIFY AS SET FORTH ABOVE, SUTEL IN

END PAGE ONE

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INDEXED OCT 28 1950

FIVE

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PAGE TWO

ORDER THAT THIS MATTER MAY BE PRESENTED TO TECHNICIANS AT NYC WHO
MIGHT BE IN POSITION TO APPEAR AS WITNESS IN FORTHCOMING TRIAL.
WFO ADVISED BY TELEPHONE TODAY TO OBTAIN PATENT.

SCHEIDT

CORRECTION PAGE ONE LINE WONE WORD SIX SHOULD BE ESP-R. OMIT M
END

MTTTTTT

NY R 20 WA LIR

Called Laboratory

Mr. Harbois

By *u.*

TWO COPIES WFO

Office Memorandum • UNITED STATES GOVERNMENT

TO : Director, FBI
 FROM : SAC, New York
 SUBJECT: ABRAHAM BROTHMAN
 ESPIONAGE - R

DATE: October 25, 1950

123344

There are enclosed five envelopes which contain photostatic copies of material found during a search of HARRY GOLD'S home in Philadelphia, Pennsylvania in June, 1950. These envelopes are numbered to correspond with the itemization of the material as set out in the report of SA ROBERT G. JENSEN dated July 5, 1950 at Philadelphia, Pennsylvania. This material is as follows:

Envelope No. 2:

This envelope contains photostatic copies of three sheets of paper with handwriting thereon.

HARRY GOLD on June 24, 1950 stated that this material was in his handwriting and was concerned with operating data on a magnesium powder plant.

Envelope No. 3:

This envelope contains photostatic copies of 11 pages of handwritten notes and handdrawn figures on legal size paper. It also contains a single sheet of ruled paper with the number 3 in the upper right hand corner and notations beginning No. 2. The following material is also contained in this envelope: a single sheet of ruled paper entitled "Notes on Computation", four sheets of unruled paper bearing the numbers 16, 17, 18 and 19 in the upper right hand corner, and a sheet of paper with the number 7 on top containing typewriting and handwriting.

HARRY GOLD advised that the 11 pages of handwritten notes and handdrawn figures on legal size paper were in his handwriting and that this material was concerned with mixing equipment. The ruled paper with the number 3 in the upper right hand corner and the notations beginning No. 2 was in BROTHMAN'S handwriting, according to GOLD. He said that this latter material referred to magnesium powder. The four sheets of unruled paper bearing the numbers 16, 17, 18 and 19 in the upper

SPECIMENS RETAINED IN LAB. For Exam.

Enclosures (5)

JMC:MJT
 100-95068

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 HEREIN IS UNCLASSIFIED
 DATE 11-18-86 BY 3042

50 NOV 8 1950

RECORDED - 43

OCT 26 1950

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Let to Dir, Att FBI Lab
NY 100-95068

right hand corner were, according to GOLD, in his handwriting and referred to the Buna-S process. The sheet of paper with the number 7 on top, according to GOLD, contained his handwriting and referred to mixing equipment.

Envelope No. 7:

This envelope contains photostatic copies of a series of handwritten notes on pages numbered 5 through 16, inclusive, on the letterhead of the Golwynne Chemical Corporation.

According to HARRY GOLD, all of the material contained in this envelope is in his handwriting and that it must have been copied from material that BROTHMAN gave him on mixing equipment.

Envelope No. 8:

This envelope contains photostatic copies of sheets of paper numbered 1 through 4 and 17 through 25. There is also photostatic copies of papers on which appear what seems to be chemical equations.

According to HARRY GOLD, the sheets of paper numbered 1 through 4 and 17 through 25 were identified by him as being in his handwriting and that this material concerned mixing equipment. The pages on which the chemical equations appear, according to GOLD, are not in his handwriting. He said that these pages might be in BROTHMAN'S handwriting, but that he did not know to what they refer.

Envelope No. 14:

Photostatic copies of the following material appear in this envelope: 14 pages of handwritten notes on graph paper entitled "HENDRICH continuous method for Buna-S manufacture". There are also 18 pages of handwritten notes that appear to be a continuation of the information

Let to Dir, ATT FBI Lab
NY 100-95068

listed on the graph paper. There is also contained in this envelope two photostatic copies of a two-page typewritten document entitled "Notes on Continuous Method Report".

All of this material was shown to HARRY GOLD on June 22, 1950 and he identified it as being in BROTHMAN'S handwriting.

* * *

The Laboratory is requested to compare the material in BROTHMAN'S handwriting as enumerated above with the known specimens of BROTHMAN'S handwriting in the Bureau's possession.

It is also requested to compare the alleged handwriting of HARRY GOLD with known specimens of HARRY GOLD'S handwriting already in the possession of the Bureau.

It is suggested that this material be referred to the same document examiner in the laboratory who examined the handwriting material of HARRY GOLD previously submitted in this case.

It is also suggested that if possible, photographs showing similarity between the questioned and known handwriting specimens of both GOLD and BROTHMAN be prepared for possible use in BROTHMAN'S trial.

As previously advised, this trial is now set for November 13, 1950. ||

FEDERAL BUREAU OF INVESTIGATION
U. S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

OCT 29 1950

TELETYPE

Mr. Tolson	
Mr. Ladd	
Mr. Clegg	
Mr. Glavin	
Mr. Nichols	
Mr. Rosen	
Mr. Tracy	
Mr. Harbo	
Mr. Belmont	
Mr. Mohr	
Tele. Room	
Mr. Nease	
Miss Gandy	

CONE WASHINGTON & WASHINGTON FIELD FROM NEW YORK 16
DIRECTOR AND SAC DEFERRED

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 4/6/87 BY 3040PWT/1mn

ABRAHAM BROTHMAN, WAS., MIRIAM MOSKOWITZ, WAS. ESP - R. REMYTEL OCT.
TWENTYFOURTH LAST. WFO REQUESTED TO SUTEL WHETHER IT OBTAINED BROTH-
MAN-S PATENT ON MIXING EQUIPMENT FROM US PATENT OFFICE AND WHETHER
IT WAS SUBMITTED TO BUREAU IN ACCORDANCE WITH RETEL. WFO ALSO REQUESTED
TO ADVISE RESULTS OF SHOWING NINETEEN THIRTY THREE PICTURE OF BROTH-
MAN TO KORNFEDER.

SCHEIDT

HOLD PLS

RECORDED - 57

31 1950

58 NOV 6 1950

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100-365040-329

Office Memorandum • UNITED STATES GOVERNMENT

TO : MR. HARBO

DATE: November 1, 1950

FROM : MR. BOWLES

SUBJECT: ABRAHAM BROTHMAN
MIRIAM MOSKOWITZ
ESPIONAGE - RALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 4/6/87 BY 3042 PWT/1MN

Tolson

Ladd

Clegg

Glavin

Nichols

Rosen

Tracy

Harbo

Mohr

Tele. Room

Nease

Gandy

At the request of AUSA ROY M. COHN, Southern District, New York, N. Y., SA H. L. Dahlgren was present in New York on October 31, 1950 for a pre-trial conference concerning this case which is set for trial November 8, 1950.

Mr. Dahlgren advised AUSA COHN that he was able to testify that HARRY GOLD wrote the handwriting in pencil on the small card designated as Q1 in this case, and that ABRAHAM BROTHMAN prepared the handprinting on the Hotel Registration Cards designated as Qc16 through Qc18 and Qc20 in this case.

Additional documents found in HARRY GOLD's home in Philadelphia during a search made in June, 1950, have also been examined in this case. Certain of these documents, according to GOLD, are in the handwriting of BROTHMAN. This handwriting has not yet been identified in the Laboratory as BROTHMAN's, because no comparable authentic known writing has been submitted. SA John M. Collins of New York office advised Mr. Dahlgren that they had located BROTHMAN's Selective Service File which might be helpful as a source of known writing. SA Collins said he would have photographs of the Selective Service File made and forwarded immediately to the Laboratory for the desired handwriting comparison. AUSA COHN stated that it would be very helpful to the case if the Laboratory examiner could testify before the jury that BROTHMAN wrote the handwriting on these documents.

AUSA COHN advised that the Bureau would be notified of the exact date when the Laboratory examiner would be called upon to testify, which he thought would be several days after the beginning of the trial.

Mr. Dahlgren returned to Washington, D. C. at 8:10 PM, October 31, 1950 by Pennsylvania Railroad.

100-365040
HLD:JARECORDED - 61
INDEXED - 61

100-365040-330

NOV 8 1950

25

R-384
51 NOV 18 1950

Office Memorandum • UNITED STATES GOVERNMENT

TO : DIRECTOR, FBI

DATE: November 3, 1950

FROM : *RH*
AP GUY HOTTEL, SAC, Washington FieldATTN: FBI LABORATORYSUBJECT: ABRAHAM BROTHMAN
ESPIONAGE - R
(Bufile 100-365040)ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIEDDATE 4/6/87 BY 3040 PNT/IMW

123717

Rebulet November 1, 1950.

Passport application of ABRAHAM BROTHMAN apparently in BROTHMAN's own handwriting delivered by Special Agent HOLLIS W. BOWERS of this office to the office of H. L. DAHLGREN, Room 7147, Department of Justice Building at 2:17 P.M. November 2, 1950.

FBI Laboratory will photograph application and conduct appropriate handwriting examination in connection with instant matter.

cc - New York (100-95068)

HNB:VC
100-21470

RECORDED - 45

100-365040

331

NOV 4 1950

EX-89

NOV 3 1950 LAB FILES

Encl. picked
up in Lab. personally
by Bowers WFO.
52 NOV 3 1950

Office Memo • UNITED STATES GOVERNMENT

TO : Director, FBI ATT: FBI LABORATORY

DATE: November 2, 1950

FROM : SAC, New York

SUBJECT: ABRAHAM BROTHMAN
ESPIONAGE - R

Enclosed herewith is box containing 47, 8 x 10 negatives prepared by the Photographic Laboratory of the New York Office as instructed by SA H. F. Dahlgren of the FBI Laboratory.

There is also enclosed one envelope containing numerous specimens of BROTHMAN'S known handwriting. These specimens were obtained from the Gelwynne Chemicals Corp., 420 Lexington Avenue, New York City. The Bureau is requested to return the enclosed known handwriting specimens to this office after completion of requested examination.

Enc-2

THZ:IM
100-95068

ALL INFORMATION CONTAINED

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DATE 4/6/8 BY 3040 PWT/lmw

SPECIAL DELIVERY
REGISTERED~~DEFERRED RECORDING~~

RECORDED - 10

G.F.X-29

NOV 8 1950

60 NOV 10

INDEX LABELS

FEDERAL BUREAU OF INVESTIGATION
U. S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

OCT 27 1950

TELETYPE

Correct
ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 4/6/87 BY 3042 PNT/lmw

WASH 52 NEWARK 7 FROM NEW YORK 27 10-43 P

DIRECTOR AND SAC, URGENT

Mr. Tolson	
Mr. Ladd	
Mr. Clegg	
Mr. Glavin	
Mr. Nichols	
Mr. Rosen	
Mr. Tracy	
Mr. Harbo	
Mr. Belmont	<input checked="" type="checkbox"/>
Mr. Mohr	
Tele. Room	
Mr. Nease	
Miss Gandy	

Enrich

①
ABRAHAM BROTHMAN, WAS., ESP - R. RE NEWARK TEL OCT. TWENTY SIX.
NEWARK REQUESTED TO CONTACT MRS. JEAN MIEMASECK AND ADVISE HER ¹²⁻¹
THAT USA, SDNY, IS CONSIDERING USING HER AS WITNESS AT TRIAL NOW SET
NOV. THIRTEEN NEXT TO CORROBORATE THAT PORTION OF HARRY GOLD TESTI-
MONY WHERE SHE WAS PRESENT DURING GOLD DASH BROTHMAN MEETINGS. SECURE
PHOTOGRAPH OF MRS. MIEMASECK, TAKEN IN APPROXIMATELY FORTY TWO OR ³²
AS CLOSE TO THAT PERIOD AS POSSIBLE, SUITABLE FOR IDENTIFICATION
PURPOSES AT TRIAL AND FORWARD NYO. EXPEDITE.

RECORDED - 33
INDEXED - 33

OCT 31 1950

NK ACK AND DISC

WA HOLD

EX-29

59 NOV 9 1950

100-365040
SCHEIDT

333
cc. Mr. Stanley
G.I.R.-7

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED

DATE 4/6/87 BY 3042 PWT/

NOV - 1 1950
IMN

FBI NEW HAVEN

TELETYPE

11-1-50

5-27 PM

DIRECTOR AND SAC, NEW YORK URGENT

ABRAHAM BROTHMAN, WAS. MIRIAM MOSKOWITZ, ESPIONAGE R. REURTEL
OCTOBER THIRTYONE LAST. DOUGLAS WEEKS, PERSONNEL MANAGER, DICTAPHONE
CORPORATION, BRIDGEPORT, CONN., ADVISES DICTAPHONE RECORDS REFLECT
PERIODIC CORRESPONDENCE BETWEEN ABRAHAM BROTHMAN AND DICTAPHONE CO.
IN VIEW OF FACT THAT BROTHMAN IN JULY, NINETEEN FORTYEIGHT, PURCHASED
OVER EIGHT HUNDRED DOLLARS WORTH OF DICTAPHONE EQUIPMENT AND THAT THE
COMPANY IS ATTEMPTING TO COLLECT AN OUTSTANDING BALANCE OF TWO HUNDRED
AND TWENTYSIX DOLLARS. CHECK OF ALL OTHER DIVISIONS AT DICTAPHONE
COMPANY DO NOT REFLECT OTHER CORRESPONDENCE WITH BROTHMAN. ALBERT G.
PURDUE, PRESIDENT, FLUID SYSTEMS, ONE EIGHTYONE DIXWELL AVENUE,
NEW HAVEN, CONN., REPORTS BROTHMAN HAS NO CONTRACT WITH THIS COMPANY.
FLUID SYSTEMS HAS PUT ON EDUCATIONAL PROGRAM RE COMPANY-S THERMAL
ELECTRIC METHOD TO ENABLE HARD FLOWING FLUIDS TO FREELY FLOW THROUGH
PIPING. IN CONNECTION WITH CAMPAIGN, ROSTER OF AMERICAN SOCIETY OF
MECHANICAL ENGINEERS WAS ACQUIRED AND EACH WAS SENT FOLDER RE SERVICES
OBTAINABLE FROM FLUID SYSTEMS, INC. BROTHMAN AND ASSOCIATES, TWO NINE
TWO EIGHT FORTYFIRST AVENUE, LONG ISLAND CITY, WAS ON LIST TO WHICH
LITERATURE WAS SENT. BROTHMAN DID NOT FILL OUT CARD FURNISHED BY
COMPANY REQUESTING FURTHER INFO OR MATERIAL AND, THEREFORE, NO OTHER
MATERIAL SUBSEQUENTLY SENT. FLUID SYSTEM HAS NO OUTSTANDING GOVERNMENT
CONTRACTS. REPORT FOLLOWS.

NY TO BE ADVISED

ACK AND HODL PLS.

60 NOV 10 1950
5-33 PM OK FEB WA FEJ HODINH

RECORDED - 33
INDEXED - 32
EX-29

NOV 8 1950

G.I.R. - 7

cc: Mr. Laffline

Mr. Tolson
Mr. Ladd
Mr. Clegg
Mr. Glavin
Mr. Nichols
Mr. Rosen
Mr. Tracy
Mr. Harbo
Mr. Belmont
Mr. Mohr
Tele. Room
Mr. Nease

DEPT. OF INVESTIGATION
DEPT. OF JUSTICE
COMMUNICATIONS SECTION

OCT 30 1950

Mr. Tolson _____
Mr. Ladd _____
Mr. Clegg _____
Mr. Glavin _____
Mr. Nichols _____
Mr. Rosen _____
Mr. Tracy _____
Mr. Harbo _____
Mr. Belmont _____
Mr. Mohr _____
Tele. Room _____
Mr. Nease _____
Miss Gandy _____

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DATE 4/6/87 BY 3042 PWT/lmw

25743

WASH 2 BOSTON 1 FROM NEW YORK

30

8:55 PM

DIRECTOR AND SAC

URGENT

ABRAHAM BROTHMAN, WAS, ESPIONAGE - R. RE REPORT OF SA JOHN R. MURPHY, DATED APRIL FIFTH, NINETEEN FIFTY, NY, REPORTS OF SA BRENTON G. GORDON, DATED MAY TWENTY FOURTH, NINETEEN FIFTY AND JUNE SEVENTH, NINETEEN FIFTY AT BOSTON AND NYLET TO DIRECTOR AND BOSTON, DATED OCT. NINTH, NINETEEN FIFTY. BOSTON OFFICE REQUESTED TO INTERVIEW ROSS C. POWELL, RM. FOUR NAUGHT FIVE, PARK SQUARE BUILDING, BOSTON, MASS., AND HARRY LEVINE, PRESIDENT OF THE COMMONWEALTH PLASTIC CO., NINETY EIGHT ADAM ST., LEOMINSTER, MASS., CONCERNING THEIR KNOWLEDGE OF COMMUNIST AND ESPIONAGE ACTIVITES OF BROTHMAN AND MIRIAM MOSKOWITZ AND ASCERTAIN WHAT BUSINESS TRANSACTIONS THEY HAD WITH BROTHMAN. BOSTON FURTHER REQUESTED TO IDENTIFY MR. LECATUR /PHONETIC/ AS SET FORTH IN REFERENCED NY REPORT. IT IS TO BE NOTED THAT LECATUR IN NINETEEN FORTY SIX MAY HAVE POSSIBLY BEEN EMPLOYED BY FLAGG, BRACKETT AND DURGIN, BOSTON, MASS., AND THAT A MR. POWELL WAS KNOWN TO LECATUR AT THAT TIME. ACCORDINGLY THE MR. POWELL KNOWN TO LECATUR MAY BE IDENTICAL WITH MR. ROSS C. POWELL AND POWELL MAY BE ABLE TO IDENTIFY LECATUR. IN THE EVENT THE BOSTON OFFICE IDENTIFIES LECATUR IT WILL CONSIDER THE POSSIBILITY OF INTERVIEWING HIM RE BROTHMAN AND MOSKOWITZ. SUTEL.

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383 MAR 5 1963

SCHEIDT

WA HOLD BS ACK AND DISC

NT

RECORDED - 11

G. I. R. INDEXED

100-365040-335

NOV 1 1950

12

CC: Mr. [Signature]

FEDERAL BUREAU OF INVESTIGATION
U. S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 4/6/87 BY 3043 PNT/IMN

OCT 28 1950

TELETYPE

WASHINGTON 7 NEW YORK 3 FROM NEWARK 10-28-50 1-26PM

DIRECTOR AND SAC URGENT

ABRAHAM BROTHMAN, WAS, ESP - R. RENTEL TO BUREAU AND NK OCTOBER
TWENTY SEVEN. JEAN NIEMASECK, ONE FIFTY ELLERY AVENUE, NEWARK,
ADVISED THIS DATE USA, SDNY CONSIDERING USING HER AS WITNESS AT TRIAL
NOVEMBER THIRTEEN NEXT. SHE HAS NO PHOTOS OF HERSELF TAKEN AROUND
NINETEEN FORTY TWO. CLOSEST PHOTO TO THAT PERIOD TAKEN FORTY FIVE
AND SHE WILL FURNISH IT TO NEWARK OFFICE MONDAY OCTOBER THIRTY.
INSTANT PHOTO WILL BE FORWARDED NY SAME DATE.

MC KEE

END

WA NK R3 NYC MCA

NK R 7 WA JIM

ALSO REAYRELAY

G.I.R.-7

RECORDED - 7

OCT 31 1950

100-365040-336

FIVE

cc: Mr. Zaffar

Mr. Tolson	
Mr. Ladd	
Mr. Clegg	
Mr. Glavin	
Mr. Nichols	
Mr. Rosen	
Mr. Tracy	
Mr. Harbo	
Mr. Belmont	
Mr. Mohr	
Tele. Room	BS
Mr. Nease	
Miss Gandy	

61 NOV 1 1950

NOVEMBER 1, 1950 - URGENT

SAC, NEWARK

ABRAHAM BROTHMAN, ESPIONAGE R. RE NEW YORK TEL OCTOBER THREE ONE.

YOU ARE AUTHORIZED TO INTERVIEW BENJAMIN AND GERTRUDE SCHWARTZMAN CONCERNING THEIR KNOWLEDGE OF CP AND ESPIONAGE ACTIVITIES OF BROTHMAN AND MOSKOWITZ UNLESS REVIEW OF YOUR FILES MAKES SUCH INTERVIEWS

INADVISABLE.

HOOVER

100-365040

CC: NEW YORK (BY MAIL)

EFE:dpk

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 4/4/87 BY 3042 PNT/IMN

(A review of identifiable C references in Bureau files concerning Benjamin and Gertrude Schwartzman fails to reflect any subversive information other than their relationship to Alexander Schwartzman, referred to in referenced teletype.)

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100-365040-337

NOV 2 1950

EX-82

25

FEDERAL BUREAU OF INVESTIGATION
U. S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

REC'D-10720M NOV 1 1950

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883 MAR 5 1963

NOV 9 1950

Tolson _____
Ladd _____
Clegg _____
Glavin _____
Nichols _____
Rosen _____
Tracy _____
Harbo _____
Belmont _____
Mohr _____
Tele. Room _____
Nease _____

NOV 1 4 44 PM
RECEIVED READING ROOM
FBI
U. S. DEPT. OF JUSTICE

FEDERAL BUREAU OF INVESTIGATION
U. S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

OCT 30 1950

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 4/6/87 BY 3042 PWT/1MN

TELETYPE

Mr. Tolson	_____
Mr. Ladd	_____
Mr. Clegg	_____
Mr. Glavin	_____
Mr. Nichols	_____
Mr. Rosen	_____
Mr. Tracy	_____
Mr. Harbo	_____
Mr. Belmont	_____
Mr. Mohr	_____
Tele. Room	_____
Mr. Nease	_____
Miss Gandy	_____

WASHINGTON 19A CHICAGO 1 FROM NEW YORK 30 8-49 P

DIRECTOR AND SAC URGENT

ABRAHAM BROTHMAN, WAS, ESP. R. BUFILE SIXTY FIVE DASH FIVE EIGHT
EIGHT ZERO FIVE, CHICAGO ONE HUNDRED DASH TWO ONE SIX TWO THREE.
REREP OF SA JOHN R. MURPHY, FOUR FIVE LAST AT NY AND REPORT OF SA
W. RULON PAXMAN, FIVE FOUR LAST, CHICAGO. ON SEVEN TWENTY NINE
LAST, BROTHMAN AND MARIAM MOSKOWITZ WERE INDICTED BY FEDERAL GRAND
JURY, SDNY, FOR CONSPIRACY TO OBSTRUCT JUSTICE IN THAT TOGETHER
WITH HARRY GOLD, A CO-CONSPIRATOR, THEY AGREED UPON FICTITIOUS
EXPLANATIONS OF THEIR ASSOCIATION WITH EACH OTHER AND DIVERS
OTHER PERSONS. IN FURTHERANCE OF THIS CONSPIRACY, AND TO EFFECT
THE OBJECTS THEREOF, BROTHMAN TESTIFIED BEFORE THE GRAND JURY ON
SEVEN TWENTY TWO FORTY SEVEN AND GOLD TESTIFIED SEVEN THIRTY ONE
FORTY SEVEN. THE NYO IS CURRENTLY INTERVIEWING ALL FORMER
ASSOCIATES OF BROTHMAN TO OBTAIN EVIDENCE OF BROTHMAN-S ESPIONAGE
ACTIVITIES. IN THIS CONNECTION, IT IS REQUESTED THAT THE CHICAGO
OFFICE INTERVIEW LOUIS AND PEARL GREEN, SEVEN EIGHT FIVE THREE SOUTH

END PAGE ONE COPIES DESTROYED

66 NOV 29 1950

88 MAR 5 1963

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NOV 1 1950

12

G.L.R.-7

100-365040-338

PAGE TWO

ESSEX AVENUE, CHICAGO; ILL. TO ASCERTAIN THE PRESENT WHEREABOUTS OF THEIR BROTHER EMANUEL ~~X~~GREEN, WHO FORMERLY RESIDED WITH THEM AT THE ABOVE CHICAGO ADDRESS. IN THE EVENT EMANUEL GREEN IS LOCATED IN THE CHICAGO AREA, IT IS REQUESTED THAT HE BE INTERVIEWED RE HIS KNOWLEDGE OF COMMUNIST AND ESPIONAGE ACTIVITY ON THE PART OF BROTHMAN AND MOSKOWITZ, AND ASCERTAIN THE NATURE OF THE ASSOCIATION BETWEEN GREEN AND BROTHMAN. SUTEL.

SCHEIDT

1111

HOLD PLS

CC: Mr Langphere

1111

XXXXXX
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XXXXXXFEDERAL BUREAU OF INVESTIGATION
FOIPA DELETED PAGE INFORMATION SHEET

1 Page(s) withheld entirely at this location in the file. One or more of the following statements, where indicated, explain this deletion.

☒ Deleted under exemption(s) b1 with no segregable material available for release to you.

☐ Information pertained only to a third party with no reference to you or the subject of your request.

☐ Information pertained only to a third party. Your name is listed in the title only.

☐ Documents originated with another Government agency(ies). These documents were referred to that agency(ies) for review and direct response to you.

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☐ For your information: _____

☒ The following number is to be used for reference regarding these pages:

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FEDERAL BUREAU OF INVESTIGATION
U.S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

NOV 2 1950

TELETYPE

Mr. Tolson	
Mr. Ladd	
Mr. Clegg	
Mr. Glavin	
Mr. Nichols	
Mr. Rosen	
Mr. Tracy	
Mr. Harbo	
Mr. Belmont	
Mr. Mohr	
Tele. Room	
Mr. Nease	
Miss Gandy	

WASHINGTON FROM NEW YORK 8 2 8-20 P

DIRECTOR URGENT ALL INFORMATION CONTAINED

HEREIN IS UNCLASSIFIED
DATE 4/7/87 BY 3042 PWT/lmw

ABRAHAM BROTHMAN, WAS., MIRIAM MOSKOWITZ., ESPIONAGE - R. REBUTEL

TO NY, DATED OCTOBER THIRTEENTH, LAST. ON MAY FIFTEENTH, LAST, MIRIAM MOSKOWITZ, PARTNER AND A SECRETARY TO ABRAHAM BROTHMAN WAS INTERVIEWED BY NYO. AT THAT TIME SHE STATED THAT BERNARD MISHKIN WAS ASSOCIATED WITH A. BROTHMAN AND ASSOCIATES IN ABOUT OCTOBER, NINETEEN FORTY SIX. SHE STATED THAT MISHKIN WAS A "CONTACT MAN" WHO KNEW SEVERAL RICH PEOPLE, AND WAS GOING TO BE A SALES REPRESENTATIVE. SHE STATED THAT NOTHING EVER CAME OF MISHKIN-S ASSOCIATION WITH THE COMPANY EXCEPT THAT HE TOOK A TRIP TO ENGLAND IN THE SPRING OF NINETEEN FORTY SEVEN, AND CAME BACK WITH A LARGE CONTRACT WITH AN ENGLISH FIRM FOR DEVELOPMENT OF A METHACRYLATE PROCESS. THIS CONTRACT WAS CANCELLED ACCORDING TO MOSKOWITZ A FEW WEEKS LATER. FORMER CONFIDENTIAL INFORMANT [REDACTED] ADVISED, ON APRIL SEVEN, NINETEEN FORTY SEVEN, THAT BERNARD MISHKIN, AN ASSOCIATE OF BROTHMAN, WENT TO LONDON, ENGLAND ON APRIL SEVEN, NINETEEN FORTY SEVEN VIA PAN-AMERICAN AIRWAYS AND RETURNED TO NYC ON APRIL TWELVE, NINETEEN FORTY SEVEN. IT WAS ASCERTAINED FROM ABOVE SOURCE THAT MISHKIN MADE THIS TRIP TO SEE DR. POMERANIAN IN LONDON CONCERNING AN AGREEMENT MADE WITH BROTHMAN TO MANUFACTURE PLAS.

END OF PAGE 2
52 NOV 8 1950 L.R.-1

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INDEXED - 59

100-365040-340
NOV 8 1950
340
UNRECORDED COPY FILED IN 100-370679

Office Memorandum • UNITED STATES GOVERNMENT

TO : D. M. Ladd

FROM : A. H. Belmont

SUBJECT: ABRAHAM BROTHMAN
MIRIAM MOSKOWITZ
OBSTRUCTION OF JUSTICE

DATE: November 3, 1950

Tolson ☒

Nease ☒

Glavin ☒

Nichols ☒

Rosen ☒

Tracy ☒

Harbo ☒

Mohr ☒

Tele. Room ☒

Nease ☒

ASAC Whelan advised on the afternoon of November 3, 1950, that U. S. Attorney Saypol had indicated that he wanted to talk with Whelan regarding wire taps as to whether any were used in the investigation of Brothman. Whelan advised that there have been four technical surveillances as follows:

[REDACTED] b2
b7D

This technical was placed on the telephone of Abraham Brothman Associates, 114 East 32nd Street, New York City, and was in operation from December 4, 1945, to October 23, 1946. It was reinstalled November 5, 1946, and discontinued December 12, 1947.

[REDACTED] b2
b7D

This technical was on the residence of Abraham Brothman at 41-08 42nd Street, Sunnyside, Queens, New York. It was originally installed December 13, 1945, and discontinued March 12, 1946.

[REDACTED] b2
b7D

This technical was installed on Brothman Associates at 85-03 57th Avenue, Elmhurst, Queens, New York. It was installed January 8, 1946, and was discontinued March 12, 1946.

[REDACTED] b2
b7D

This technical was installed on the telephone at Abraham Brothman's office at 29-28 41st Avenue, Long Island City, Queens, New York. It was installed October 23, 1946, and was discontinued December 12, 1947.

ALL INFORMATION CONTAINED

HEREIN IS UNCLASSIFIED

DATE 4/7/87 BY 3042 PWT/IMW

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Two of the agents scheduled as witnesses in the trial of Brothman, namely Special Agents D. E. Shannon and F. D. O'Brien, have knowledge of these technicals and their initials appear on logs and technical slips. In addition, at the time these technicals were in operation, it was customary to place pertinent technical slips in the file and there are a number of these old slips in the file. The custom of placing these slips in file was not in effect at the time of the Coplon case. You will recall that at that case it was brought out that these records were destroyed.

In addition to the above, there was a highly confidential source utilized in this case during 1946 at the office of Abraham Brothman Associates, 114 East 32nd Street. Special Agents Shannon and O'Brien participated in obtaining information from this highly confidential source. There was also a highly confidential source utilized in this case about May, 1950. None of the witnesses scheduled to testify in the Brothman trial have knowledge of this source.

It was the observation of ASAC Whelan that, since the trial of this case strictly involves obstruction of justice before a Grand Jury, there appears to be no logical reason why the question of the use of wire tapping should come up in connection with the prosecution of the case. However, under the broad rulings of Judge Ryan in the Coplon case, it is conceivable that the court in hearing the Brothman case might allow the defense to inquire into various phases of the investigation to determine if there was any wire tapping, etc. Whelan requested advice as to whether he should furnish Saypol with information regarding the wire tapings and whether, in the event the question is brought up regarding highly confidential sources, he should advise Saypol of these.

It appears that the U. S. Attorney is entitled to any information regarding the investigation of Abraham Brothman which may be of assistance to him in connection with the possible arguments and positions taken by the defense of the case.

RECOMMENDATION

It is recommended that ASAC Whelan be authorized to advise U. S. Attorney Saypol of the information regarding technicals installed and the facts developed from them.

It is further recommended that in the event inquiry is made regarding highly confidential sources then Saypol should be advised regarding these. It is noted that this case is scheduled for trial on November 8, 1950. Saypol has indicated to Whelan that he will call him at the first available opportunity for discussion of these matters.

New York Office should be advised telephonically of the action to be taken.

*I concur.
H. 11/1/50
when
advised by phone
V. J. Joyce
J. J. [signature]*

Office Memorandum • UNITED STATES GOVERNMENT

TO : Director, FBI

DATE: November 6, 1950

FROM : SAC, New York

SUBJECT: ABRAHAM BROTHMAN
ESPIONAGE - R

G. I. R.

pg 2-1

Reurtel 11/2/50 concerning Jury Panel.

Following the procedure established in the COPLON-GUBITCHEV case, this office is placing the indices and election check results on individual sheets of paper, one sheet per juror. The sheets will then be arranged in alphabetical order, placed in an appropriate notebook and given to U.S. Attorney Irving Saypol. After the jury has been picked, the names in the notebook will be indexed and made an exhibit in this file.

ERT:IM
100-95068ALL INFORMATION CONTAINED
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DATE 4/6/87 BY 3042 PNT/1mw

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100-365040-342

NOV 7 1950

3

NOV 10 1950

Assistant Attorney General James M. McInerney

November 3, 1950

Director, FBI

ABRAHAM BROTHMAN

ESPIONAGE - R

~~CONFIDENTIAL~~

100-365040-343

There are being furnished herewith copies of the following reports which have been submitted in connection with the above-entitled matter.

Report of Special Agent Gilmer G. Robinson, dated at Los Angeles, October 25, 1950;

Report of Special Agent William M. O'Brien, dated at Chicago, October 31, 1950.

Attachments

EFE:mes

100-365040

APPROPRIATE AGENCIES
ADVISED BY ROUTING SLIP(S)
DATE 10-21-50

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NOV 13 1950

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102

SAC, NEW YORK

November 2, 1950

DIRECTOR, FBI

ABRAHAM BROTHMAN

ESPIONAGE - R

You are authorized to furnish the United States Attorney for the Southern District of New York with copies of the following reports which have been submitted in this case:

Report of Special Agent Gilmer G. Robinson,
dated at Los Angeles, October 25, 1950;

Report of Special Agent William M. O'Brien,
dated at Chicago, October 31, 1950.

100-365040

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ALL INFORMATION CONTAINED
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DATE 4/6/87 BY 3042 PWT/lmw

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FBI

REC'D - RECORDS SECTION

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RECEIVED - TROOP

- Tolson
- Ladd
- Clegg
- Glavin
- Nichols
- Rosen
- Tracy
- Harbo
- Belmont
- Mohr
- Tele. Room
- Nease
- Gandy

MAILED 9
NOV 3 1950
COMMUNICATIONS SECTION

60 NOV 13 1950

FEDERAL BUREAU OF INVESTIGATION
U. S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

NOV -2 1950

ALL INFORMATION CONTAINED
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DATE 4/6/82 BY 3042 PNT/1MW

TELETYPE

Mr. Tolson _____
Mr. Ladd _____
Mr. Clegg _____
Mr. Glavin _____
Mr. Nichols _____
Mr. Rosen _____
Mr. Tracy _____
Mr. Harbo _____
Mr. Belmont _____
Mr. Mohr _____
Tele. Room _____
Mr. Nease _____
Miss Gandy _____

WASHINGTON 11 NEW YORK 5 PHILA 2 FROM NEWARK

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DIRECTOR AND SACS

U R G E N T

ABRAHAM BROTHMAN, WAS, MIRIAM MOSKOWITZ, ESP-R. RE NY TELS TO NEWARK
OCTOBER THIRTY ONE AND NOVEMBER ONE AND NY TEL TO BUREAU, NK, PHILA
AND BOSTON OCTOBER THIRTYONE, WHICH CONTAIN LEAD TO INTERVIEW CONTACTS
AND ASSOCIATES OF SUB TO ASCERTAIN THEIR KNOWLEDGE RE ANY COMMUNIST
OR ESPIONAGE ACTIVITIES ON PART OF BROTHMAN AND MARKOWITZ AND ALSO
TO ASCERTAIN THEIR BUSINESS TRANSACTIONS WITH BROTHMAN. ONE JEROME
KLINE DESCRIBED AS A CONTACT. INVESTIGATION REFLECTS HE IS SELF EM-
PLOYED TAX CONSULTANT AND ACCOUNTANT WITH OFFICES AT ONE NAUGHT ONE ONE
FINANCE BUILDING, PHILADELPHIA AND PRESENTLY RESIDES WYNNEWOOD SECTION
THAT CITY, TELEPHONE ARDMORE SEVEN SEVEN SIX EIGHT W. KLINE FORMERLY
RESIDED FOURTEEN FORTY SIX ORMOND AVE., CAMDEN, N. J., AND WAS FORMERLY
EMPLOYED AS REVENUE AGENT, US TREASURY DEPARTMENT, AT GIMBEL
BUILDING, PHILA. PHILA INTERVIEW KLINE IN ACCORDANCE WITH INSTRUCTIONS
CONTAINED IN REFTELS. EXPEDITE AND SUTEL. N. Y.

END

ACK ORD PLS

RECORDED - 49

WA NK 4 XX NK R 11 WA FEJ

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PH NK R 2 PH NOB
59 NOV 29 1950
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NOV 4 1950

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UNRECORDED COPY FILED IN 100-370679-1

FEDERAL BUREAU OF INVESTIGATION

FORM NO. 1
THIS CASE ORIGINATED AT

NEW YORK

NH FILE NO. 65-1336 md

REPORT MADE AT NEW HAVEN	DATE WHEN MADE 11/7/50	PERIOD FOR WHICH MADE 11/3,6/50	REPORT MADE BY SA LLOYD S. GOODROW
TITLE ABRAHAM BROTHMAN, Was.			CHARACTER OF CASE ESPIONAGE - R

SYNOPSIS OF FACTS:

ADMINISTRATIVE

Samples of handwriting of ABRAHAM BROTHMAN secured from Rufert Chemical Co., division of Seymour Mfg. Co., Seymour, Conn. and forwarded to Bureau. Mr. ROSS C. POWELL, of Mansfield, Conn. currently on 2 week vacation and can be located in care of CHARLES E. GREGG, 6046 North Clairmont St., Chicago, Ill. and/or Mrs. W. J. MC GUIRE, 224 15th St., N.W., Cedar Rapids, Iowa.

G. I. R. -7

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 4/6/87 BY 3042 PNT/1mw

DETAILS:

Mr. O. T. STOCKER, General Manager of the Rufert Chemical Co., a division of the Seymour Manufacturing Co., made available the following items which represent samples of the handwriting of ABRAHAM BROTHMAN, which have been submitted to the FBI Laboratory for examination purposes:

1. One letter dated 7/2/42 to Mr. M. BLUME, signed ABE BROTHMAN.
2. One letter dated 10/1/42 to Mr. M. L. FREED, signed A. BROTHMAN.
3. One letter dated 12/15/42 to Mr. F. G. SPACE, signed A. BROTHMAN.
4. Carbon copy of a letter dated 12/1/42 to Mr. M. L. FREED, signed A. BROTHMAN.
5. Pencil report entitled "Summary of Processing Conditions" dated 8/8/44 initialled A.B.
6. Handwritten ink report entitled "Derivation of Expression for Steam Consumption in Webber's Proposed 'Steam Distillation' of Free Fatty Acids from Triglycerides"

APPROVED AND FORWARDED: <i>Helen N. Wells</i> SPECIAL AGENT IN CHARGE	DO NOT WRITE IN THESE SPACES	
COPIES OF THIS REPORT 5-Bureau 4-New York 2-Omaha 2-Chicago 2-New Haven COPIES DESTROYED	100 - 365 040 - 346	RECORDED - 24
	NOV. 8 1950	INDEXED - 24
	EX - 68	

PROPERTY OF FBI - This confidential report and its contents are loaned to you by the FBI and are not to be distributed outside of agency to which loaned.

59 NOV 13 1950

NH 65-1336

ADMINISTRATIVE

It is noted that the Summary of "Processing Conditions" and the report on "Derivation of Expression for Steam Consumption in Webber's Proposed 'Steam Distillation' of Free Fatty Acids From Triglycerides" represent confidential industrial processes of the Rufert Chemical Company and should under no circumstances be made public.

X By teletype dated 11/1/50 the Boston office advised New Haven that ROSS C. POWELL currently resided in Mansfield, Conn. POWELL, a consulting engineer, formerly did business at room 404, APRK Square Building, Boston, Mass. and is known to have been at least a business acquaintance of ABRAHAM BROTHMAN.

Investigation conducted by SA WILLIAM H. BOOTH at Storrs, Conn., reflects that Mr. ROSS C. POWELL is at present on a two week vacation and can be located care of CHARLES E. GREGG, his brother-in-law, 6046 North Clairmont St., Chicago, Ill. or Mrs. W. J. MC GUIRE, 224 15th St., N.W., Cedar Rapids, Iowa.

REFERRED UPON COMPLETION TO THE OFFICE OF ORIGIN

LEADSTHE CHICAGO OFFICEAT CHICAGO, ILL.

At 6046 North Clairmont St., Chicago, Ill., will locate CHARLES E. GREGG, care of his brother-in-law, at this address and will interview him concerning his information of any Communist or Espionage activity on the part of ABRAHAM BROTHMAN and MIRIAM MOSCOWITZ.

Will ascertain what business transactions transpired between POWELL and BROTHMAN.

Will interview POWELL concerning his knowledge of one LECATUR (ph) who apparently in 1946 could have been employed by the firm of Flagg, Bracket & Durgin, formerly of Leominster, Mass. and later of Boston, Mass.

Will ascertain if LECATUR was in any way associated with POWELL in whatever negotiations POWELL had with BROTHMAN.

If LECATUR is identified and his whereabouts is learned, a teletype should be sent to the office covering LECATUR'S residence with a lead to interview LECATUR re any knowledge of Communist or Espionage activity of BROTHMAN and MOSCOWITZ.

Will ascertain from POWELL if he has records of business transactions with BROTHMAN and if so, where records are currently located inasmuch as efforts are now being made to locate additional handwriting specimens of BROTHMAN other than his signature.

THE OMAHA OFFICEAT CEDAR RAPIDS, IOWA

At 224 15th St., N.W. Cedar Rapids, Iowa, will locate ROSS C. POWELL, care of Mrs. W. J. MC GUIRE.

In the event that POWELL is located, will conduct investigation set forth under leads for the Chicago Office.

The above leads were sent by teletype to Omaha and Chicago on 11/3/50.

NH 65-1336

ADMINISTRATIVE

REFERENCE: Teletype from Bureau to New Haven, 11/1/50
Boston teletype to New Haven, 11/1/50
New Haven teletype to Bureau, Omaha & Chicago, 11/3/50

BUREAU OF INVESTIGATION
DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

OCT 31 1950

TELETYPE

WASHINGTON FROM NEW YORK 1

31

127 A

DIRECTOR

DEFERRED

ABRAHAM BROTHMAN, WAS., MIRIAM MOSKOWITZ, ESPIONAGE R. WILLIAM BONDY,
US DISTRICT JUDGE, SDNY, ADJOURNED UNTIL NOV. EIGHTH NEXT START
OF SUBJECTS TRIAL. HE DENIED THEIR REQUEST FOR ADDITIONAL POSTPONE-
MENT AND STATED THAT NO FURTHER ADJOURNMENTS WILL BE GRANTED.

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 4/6/87 BY 3040 PWT/IMN

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NOV 1 1950

50 NOV 10 1950

Mr. Tolson ☒
Mr. Ladd ☒
Mr. Clegg ☒
Mr. Glavin ☒
Mr. Nichols ☒
Mr. Rosen ☒
Mr. Tracy ☒
Mr. Harbo ☒
Mr. Mohr ☒
Tele. Room ☒
Mr. Nease ☒
Miss Gandy ☒

UNRECORDED COPY FILED IN 100-370679

Office Memorandum • UNITED STATES GOVERNMENT

TO : A. H. Belmont

DATE: November 1, 1950

FROM : C. E. Hennrich

SUBJECT: ABRAHAM BROTHMAN
ESPIONAGE - RALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 4/4/87 BY 3042PAT/1mw

PURPOSE:

To advise the State Department of the Bureau's desire to interview Alexander Svenchansky and to authorize such interview by the New York Office.

DETAILS:

For your information, Harry Gold, confessed Soviet agent, at the time he furnished the details of his association with Abraham Brothman advised that through conversation with Brothman it was his impression one Shura Swan was an individual formerly connected with Amtorg Trading Corporation who possibly introduced Brothman into Soviet espionage activities.

An investigation was thereupon conducted in an effort to determine the identity of Shura Swan, referred to by Gold. The New York Office has advised by teletype dated October 31, 1950, that this individual has been positively identified through informants as one Alexander Svenchansky. Svenchansky is an American citizen who in 1925 was employed by a textile syndicate formed by the Chase National Bank for the purpose of purchasing American cotton for Russia. He subsequently was employed by Amtorg Trading Corporation in New York City. According to this teletype, Svenchansky is presently employed as Program Officer in the European and Middle Eastern Service of the United Nations at Lake Success, New York.

RECOMMENDATION:

It is recommended that the State Department be advised through Liaison of the Bureau's desire to immediately interview Svenchansky relative to his knowledge of the activities of Brothman. It is further recommended that the New York Office be authorized

100-365040
Attachment
RFE:dpk

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G. I. R. - 7

INDEXED - 48

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to immediately conduct the desired interview of Svenchansky so that sufficient time will be available prior to the Brothman trial on November 8, 1950, to enable the United States Attorney to subpoena Svenchansky before the Federal Grand Jury in the Southern District of New York. A teletype to the New York Office authorizing this interview is attached hereto for your approval.

*cleared with
Mr. Nicholson
11/1/50
OK.
H.*

*gh
✓
gh*

XXXXXX
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XXXXXXFEDERAL BUREAU OF INVESTIGATION
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- ☐ Deleted under exemption(s) _____ with no segregable material available for release to you.
- ☐ Information pertained only to a third party with no reference to you or the subject of your request.
- ☐ Information pertained only to a third party. Your name is listed in the title only.
- ☐ Documents originated with another Government agency(ies). These documents were referred to that agency(ies) for review and direct response to you.

_____ Pages contain information furnished by another Government agency(ies). You will be advised by the FBI as to the releasability of this information following our consultation with the other agency(ies).

6 Page(s) withheld for the following reason(s):

Disposition in Gold 65-57449-719

☐ For your information: _____

☒ The following number is to be used for reference regarding these pages:

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BUREAU OF INVESTIGATION
DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

OCT 27 1950

TELETYPE

Mr. Tolson ✓
Mr. Ladd ✓
Mr. Clegg ✓
Mr. Glavin ✓
Mr. Nichols ✓
Mr. Rosen ✓
Mr. Tracy ✓
Mr. Harbo ✓
Mr. Belmont ✓
Mr. Mohr ✓
Tele. Room ✓
Mr. Nease ✓
Miss Gandy ✓

WASH FROM NEW YORK

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11-22

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25742

DIRECTOR

URGENT

ABRAHAM BROTHMAN, WAS, MIRIAM MOSKOWITZ, WAS, ESP-R. AUSA ROY M. COHN ADVISED OCT. TWENTY SEVEN THAT IT WAS AGREED AT CONFERENCE HELD THAT DAY AMONG USA IRVING SAYPOL, JAMES MC INERNEY OF DEPART., AND HIMSELF THAT SUBJECTS TRIAL WOULD BE PLACED ON CRIMINAL CALENDAR FOR OCT. THIRTY NEXT. BUT WOULD BE ADJOURNED UNTIL NOV. SIX NEXT AT WHICH TIME THERE WOULD BE A FURTHER ADJOURNMENT UNTIL NOV. EIGHT OR A DAY OR SO THEREAFTER. AUSA COHN EMPHASIZED THAT THIS SCHEDULE WAS TENTATIVE BUT WOULD BE ADHERED TO AS CLOSELY AS POSSIBLE. AUSA COHN DESIRES PRESENCE OF DOCUMENT EXAMINER ASSIGNED THIS CASE IN NYC MORNING OF OCT. THIRTY ONE NEXT. FOR PRE TRIAL CONFERENCE, RE REPORT SA J. M. COLLINS, DATED OCT. TWENTY SIX, NYC. BUREAU AUTHORIZATION REQUESTED TO FURNISH COPY OF THIS REPORT TO USA, SDNY.

SCHEIDT

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REPORT
of the



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FEDERAL BUREAU OF INVESTIGATION
WASHINGTON D. C.

25740

11-17-86 5042 PWT/elm
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Declassify on OADR

SAC, New York

November 6, 1950

There follows the report of the FBI Laboratory on the examination of evidence received from your office on November 3, 1950 and from the Washington Field office on November 2, 1950.

APPROPRIATE AGENCIES

AND FIELD OFFICES

ADVISED BY ROUTING

SLIP(S) OF Class

DATE 6/29/75

ABRAHAM BROTHMAN
Espionage - R

John Edgar Hoover, Director

YOUR FILE NO.

FBI FILE NO.

100-95066

LAB. NO.

100-365040

B-123661

B-123747

Examination requested by:

SAC, New York, SAC, Washington Field

Reference:

Letters dated 11/1/50, 11/1/50

Examination requested:

Document

CLASSIFIED BY 2355

EXEMPT FROM GDS, CATEGORY 2, 3

DATE OF DECLASSIFICATION INDEFINITE

Specimens:

Photographic negatives made of original documents, photostatic copies of which were previously submitted by your office with a letter dated October 25, 1950 and designated as follows:

- Q11 Sheet of ruled paper with number 3 in upper right hand corner with notations beginning "2. according to Trink..."
- Q12 Fourteen pages of handwritten notes on graph paper entitled "Hendrick Continuous Method For Buna-S Manufacture."
- Q13 Eighteen pages of handwritten notes that appear to be a continuation of the information listed on the graph paper, Q12.

Photographic negatives of documents not previously received:

- Q14 Three diagrams entitled "Westinghouse Aerial Container," "Armstrong Valve" and "Pumac/Vunia Inc. Model Aerial Dispenser."
- Q15 Passport application form #20104 containing known handwriting of Abraham Brothman. (submitted by Washington Field office)
- Q16 Photographic negatives of 11 pages of the selective service file of Abraham Brothman containing his known handwriting.
- Q17 46 pages containing known handwriting of Brothman obtained from Colson Chemicals Corporation, New York City.

NOV 6 1950
COMM-FBI

Tolson
Ladd
Clegg
Glavin
Nichols
Rosen
Tracy
Harbo
Belmont
Mohr
Tele. Room
Nease
Gandy

Enclosed - REGISTERED MAIL SPECIAL DELIVERY

2 - Washington Field 100-365040

1 - Philadelphia

SECRET

HLD:PJRM

page one

continued next page

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25741

Results of examinations

It was concluded that the handwriting on Qc1, the carbon copy handwriting on Qc13, the original handwriting on Qc14 and the handprinting on Qc21 were prepared by ABRAHAM BROTHMAN, whose known handwriting is found on specimens KJ through K5.

It should be noted that the portion of K5 comprising the Burton page article entitled "Bendrick Contingent Method For Bomb-S Manufacture" is the original copy of specimen Qc13, the latter having been made at the same time as the original with the use of carbon paper. It is further noted that another portion of K5 is a thirteen page carbon copy article entitled "Removal & Recovery of Unrecovered Myrums & Explosives From Polymer Emulsion." This carbon copy article has been made at the same time as the corresponding pages of the document represented by Qc14 in this case.

It should be noted that the authenticity of the known handwriting and handprinting appearing on specimens KJ through K5 should be established if it is contemplated that they will be used as evidence at the trial in this case.

Specimen KJ was personally returned to Special Agent Nellie W. Brown of the Washington Field office on November 2, 1950.

Specimen K5 is returned herewith to the New York office. Only representative pages included with K5 have been photographed in the laboratory. The negatives submitted and which are represented by Qc1, Qc13, Qc14, Qc21 and K4 are retained.

The following evidence is also being forwarded herewith to the New York office for possible use at the trial of this case: specimen K17, Bureau file 65-59143, consisting of six cards bearing the known handwriting of HARRY GOLD submitted by the Philadelphia office with a letter dated July 21, 1950 under the caption "ALFRED BRAN MACK, with aliases, Espionage - R;" specimen K1, consisting of one page of known handwriting by ABRAHAM BROTHMAN submitted in this case by your office with a letter dated June 19, 1950; specimen K2, Bureau file 65-57419, consisting of eight sheets of paper bearing the known handwriting and handprinting of HARRY GOLD, submitted by the Philadelphia office with a letter dated May 20, 1950 under the caption "ABRAHAM BROTHMAN, Espionage - R." Photographic copies of these specimens have been made.

SECRET

100-365040

Negatives made by M. J. Papp
for Qc 4, Qc 13, Qc 14, Qc 15

47-8x10 Neos.
CASE # 100-95068

8L-1810CV
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enclosure 100-365040-251

XXXXXX
XXXXXX
XXXXXXFEDERAL BUREAU OF INVESTIGATION
FOIPA DELETED PAGE INFORMATION SHEET

_____ Page(s) withheld entirely at this location in the file. One or more of the following statements, where indicated, explain this deletion.

- ☐ Deleted under exemption(s) _____ with no segregable material available for release to you.
- ☐ Information pertained only to a third party with no reference to you or the subject of your request.
- ☐ Information pertained only to a third party. Your name is listed in the title only.
- ☐ Documents originated with another Government agency(ies). These documents were referred to that agency(ies) for review and direct response to you.

_____ Pages contain information furnished by another Government agency(ies). You will be advised by the FBI as to the releasability of this information following our consultation with the other agency(ies).

53

Page(s) withheld for the following reason(s):

EBF Contains negative sheets which cannot
to adequately photocopied.

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100-365040-351 EBF

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FEDERAL BUREAU OF INVESTIGATION

Form No. 1
THIS CASE ORIGINATED AT **NEW YORK**

FILE NO. **65-1718**

REPORT MADE AT CINCINNATI, OHIO	DATE WHEN MADE 11/3/50	PERIOD FOR WHICH MADE 10/26, 27/50; 11/1, 2/50	REPORT MADE BY WADE H. ALLEY
TITLE ABRAHAM BROTHMAN, was.			CHARACTER OF CASE ESPIONAGE - R

SYNOPSIS OF FACTS:

R. H. McELROY, President, International Engineering Co., Dayton, Ohio, states subject, while employed Chemurgy, worked on research of chemical mixers for International. Work was not confidential but essential to war effort. Subject's activities unknown to McELROY. GOLD and MOSKOWITZ also unknown to McELROY. Steel Products Engineering Co., Springfield, Ohio, forwarded BROTHMAN an unsolicited sales letter and descriptive literature concerning their household and industrial stokers on 10/1/50, receiving no response, and having no other contact with BROTHMAN.

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 4/6/87 BY 3042PWT/1MN

- RUC -

DETAILS:

AT DAYTON, OHIO

Mr. R. H. McELROY, President, International Engineering Company, 1145 Bolander Avenue, upon interview furnished the following information concerning subject BROTHMAN:

Sometime prior to the start of the War, International Engineering was interested into getting into the manufacture of chemical mixers, dry and liquid, and in order to do so it was necessary to secure the services of a Chemical Engineer. Following a search for such a person, and through Mr. E. SAUMENICHT, New York City representative of International Engineering, ARTHUR P. WIEHER and ABRAHAM BROTHMAN were retained as Consulting Engineers to design mixers for both liquid and dry chemicals and also to prepare a symposium on "The Art of Mixing."

APPROVED AND FORWARDED <i>J. E. Rothloff</i>	SPECIAL AGENT IN CHARGE	DO NOT WRITE IN THESE SPACES	
COPIES OF THIS REPORT 2 - Bureau - 1 cc McElroy 3 - New York 2 - Cincinnati		100-365040-352 <div style="display: flex; justify-content: space-around;"> 1 1 </div>	RECORDED - 5 INDEXED - 5
		NOV 7 1950	

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383 MAR 5 1963

Continuing, Mr. McELROY related that BROTHMAN and WEBER worked on this project; however, they soon exhausted their funds and they then made a deal with an individual named GOLDWYN, who maintains offices on Lexington Avenue in New York City, who financed them in a new company known as Chemurgy. In July, 1942, a two-year contract was entered into between International Engineering and Chemurgy for the above work and this contract expired in July, 1944; however, they were paid a few auxiliary fees for some work after the expiration of the contract.

McELROY stated that at the conclusion of the contract BROTHMAN and WEBER prepared the desired symposium; however, he later understood and learned that BROTHMAN had sold a copy of it to the Graver Tank Company in Chicago, Illinois, without his, WEBER'S, consent, and stated that BROTHMAN possibly had sold same also to other companies in the chemical mixing industry.

McELROY stated that the work done by BROTHMAN in connection with the contract was neither restricted nor confidential; however, it was at that time essential to the war effort as International Engineering was furnishing various mixers to companies which held war contracts, and this company also was selling mixers directly to Government agencies. It was for this reason that Selective Service deferment was requested.

McELROY stated that during the period of the contract with Chemurgy he saw BROTHMAN at New York, N. Y. on perhaps a dozen occasions, all of which were on business in connection with the research on the mixers. He stated that he had no knowledge of BROTHMAN'S alleged espionage activities until he read of same in the newspapers. He also advised that he knew none of BROTHMAN'S associates other than WEBER, and that HARRY GOLD and MIRIAM MOSKOWITZ are unknown to him.

It is to be noted that ARTHUR P. WEBER presently is the New York representative of International Engineering Company.

The following investigation was conducted by

SA CARL A. BETSCH:

AT SPRINGFIELD, OHIO

RUDOLPH B. YIRAK, Secretary, Steel Products Engineering Company, 1205 West Columbia Street, advised as follows:

Cin. 65-1718

Records of this company disclosed that the only contact had by said company with ABRAHAM BROTHMAN was in the forwarding to BROTHMAN on October 1, 1950, an unsolicited sales letter enclosing descriptive literature concerning this company's household and industrial heating and stoker equipment.

BROTHMAN'S name and address was obtained by the company on a list of 2,333 names, compiled as of August 8, 1950, by W. S. Ponton, Incorporated, 635 Sixth Avenue, New York, New York, compilers of mailing lists.

Steel Products Engineering Company purchased this list for use in sales promotion work and BROTHMAN'S name and address appear thereon as "A. BROTHMAN, 2928 41st Avenue, Long Island City, New York." Steel Products Engineering Company keeps a record of all responses to such contacts, and no response has been received from BROTHMAN.

YIRAK made appropriate notation in the company records so that he would be advised of any subsequent contact by BROTHMAN with his company, and YIRAK in turn will immediately notify this office of same.

- REFERRED UPON COMPLETION TO THE OFFICE OF ORIGIN -

ADMINISTRATIVE PAGE

By Cincinnati teletype dated October 27, 1950,
New York was advised of the results of interview of R. H. McLEROY,
International Engineering Company, Dayton, Ohio, as reported herein.

REFERENCE:

New York teletype to Cincinnati and
Indianapolis, dated 10/25/50.
Cincinnati teletype to New York,
dated 10/27/50.
New York teletype to New Haven, Buffalo,
Detroit and Cincinnati, dated 10/31/50.
Butel to Cincinnati, Detroit and New Haven,
dated 11/1/50.

Office Memorandum • UNITEL

TO : Director, FBI

FROM : SAC, New York

SUBJECT: ABRAHAM BROTHMAN
ESPIONAGE - R
Bureau File # 100-465040

DATE: November 8, 1950

There is enclosed herewith for the completion of the Bureau file a photostatic copy of BROTHMAN'S Selective Service file.

ENC.

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED

DATE 4/6/87 BY SP4/PST/1mm

THZ:ENO
100-95068

RECORDED 56
NOV 10 1950

100-365040-353

NOV 13 1950

NOV 15 1940

Queens County, New York

NOV 8 1940

SELECTIVE SERVICE QUESTIONNAIRE

Order No. 52

Date of mailing

LOCAL BOARD NO. 245
P. S. 125, 40-01 43rd Ave.
Queens County New York
(City or town)
(State or local board)

Name ABRAHAM BROTHMAN
(First) (Middle) (Last)
Address 43-09 40 ST.
(Number and street or R. F. D. route)
L.I. CITY Q N.Y.
(City or town) (County) (State)

NOTICE TO REGISTRANT

You are required by the Selective Training and Service Act of 1940 to fill out this Questionnaire truthfully and to return it to this Local Board on or before the date shown below. Willful failure to do so is punishable by fine and imprisonment.

This Questionnaire must be
returned on or before

NOV 15 1940

Samuel Murolo
Member of Local Board.

(The above items are to be filled in by the Local Board before the Questionnaire is mailed to the registrant.)

INSTRUCTIONS

This Questionnaire is intended to furnish the Local Board with information to enable it to classify you in one of the following Selective Service classes:

Class I includes men who are available for induction into the armed forces of the United States.

Class II includes those whose induction is deferred because of the importance to the Nation of the service they are rendering in their civilian activities.

Class III includes those whose induction is deferred because they have persons dependent upon them for support.

Class IV includes those whose induction is deferred by law and those unfit for military service.

You will receive notice from your Local Board of your classification.

Oaths required in the Questionnaire may be administered by (1) a member or chief clerk of a Local Board or Board of Appeal, member or associate member of an Advisory Board for Registrants, or a Government Appeal Agent; (2) any Postmaster, Notary Public, or any Federal, State, county, or municipal officer authorized by law to administer oaths generally or for military purposes. No fee should be charged for this service.

Advisory Boards for Registrants are organized to assist registrants in completing their Questionnaires. No charge

Any statements in this Questionnaire marked (Confidential) are for information only of the officials duly authorized under the regulations to examine them.

will be made for this service. If there is no Advisory Board available, you must nevertheless complete your Questionnaire.

If the registrant is an inmate of an institution and is unable to complete the Questionnaire, the executive head of the institution shall communicate these facts immediately to the Local Board.

1. Make no alterations in the printed matter in this Questionnaire.
2. Write the applicable words in the spaces provided in the Questionnaire.
3. If you furnish additional information or affidavits with your Questionnaire, attach the same securely to it.
4. If you are already in the active military or naval service, obtain a certificate to that effect from your commanding officer and attach same to your Questionnaire.
5. After this Questionnaire has been returned, report to your Local Board at once any change of address or any new fact which may affect your classification.

WHEN A NOTICE AFFECTING YOU IS POSTED AT THE OFFICE OF YOUR LOCAL BOARD, YOU ARE BOUND TO PERFORM THE DUTY REQUIRED EVEN IF NO NOTICE REACHES YOU BY MAIL.

STATEMENTS OF THE REGISTRANT

Series I—IDENTIFICATION

INSTRUCTIONS.—Every registrant shall fill in all statements in this series.

1. My name is (print) Abraham (First name) Brothman (Last name)
2. In addition to the name given above, I have also been known by the name or names of _____
3. My residence is 43-09 40th St. (Number and street or R. F. D. route)
Long Island City (City, town, or village) Queens (County) New York (State)
4. My telephone number is LI 6-7769 (If you have no phone, write "None.")
5. My Social Security number is have lost card (If none, write "None.")

Series II—PHYSICAL CONDITION (Confidential)

INSTRUCTIONS.—Every registrant shall fill in all statements in this series.

1. To the best of my knowledge, I have no physical or mental defects or diseases. If so, they are _____
2. I am not an inmate of an institution. If so, its name is _____ and it is located at _____

Series III—EDUCATION

INSTRUCTIONS.—Every registrant shall fill in all statements in this series.

1. I have completed 8 years of elementary school and 4 years of high school.
2. I have had the following schooling other than elementary and high school (If none, write "None"):

Name of Vocational School, College, or University	Course of Study	Length of Time Attended
<u>Columbia University</u>	<u>Chemical Engineering</u>	<u>5 years</u>

Series IV—OCCUPATION OR ACTIVITY

INSTRUCTIONS.—All registrants shall fill in statement No. 1 in this series. Every registrant who is now working shall fill in all statements in this series except No. 8. Every registrant who is now prevented from working merely because of some seasonal or temporary interruption shall fill in all statements except statements numbered 3 through 8 in this series. As used in this series, words such as occupation, work, and job apply to services rendered in any endeavor and to training or preparation for any endeavor.

1. I am working at present.
2. The job I am working at now is (give full title, for example: Construction draftsman, turret-lathe operator, stationary engineer, farm laborer, prosecuting attorney, physics teacher, medical student, policeman, marriage license clerk, etc.): Chief Engineer in charge of machine design
2. I do the following work in my present job (be specific—give a brief statement of your duties): design equipment for the chemical, petroleum, plastics, food, and metal refining industries
4. I have done this kind of work for 7 years
5. My average weekly earnings in this job are \$ 100.00 (Confidential)
6. In this job I am ☒ an employee, working for salary, wages, commission, or other compensation.
☐ an independent worker, working on my own account, not hired by anyone, and not hiring any help.
☐ working for my father or for the head of my family, but receiving no pay.
☐ an employee or proprietor hiring paid workers.
☐ a student preparing for _____
7. My employer is: Hindalsh Manufacturing Company, Canonsville, Pa.
30 Church St. New York City
whose business is manufacture of machinery and general fabricated steel products
8. Other business or work in which I am now engaged is writing of technical articles on machine design, chemical engineering problems, also engaged in writing textbook on machine design.

Series IV.—OCCUPATION OR ACTIVITY—Continued

9. If you are not now working because of some seasonal or temporary interruption, attach to this page a statement (a) explaining what the interruption is, when it began, and when you expect to be able to resume your work, and (b) supplying substantially the same information regarding your last job as is required in the above items in this series.

10. I am not licensed in a trade or profession; if so, I am licensed as _____
(Ain, am not) (For example: Marine pilot, physician, engineer, stationary engineer)

11. I _____ at present an apprentice under a written or oral agreement with my employer.
(Ain, am not)

12. Other facts which I consider necessary to present fairly the occupation which I have described, or my connection with it, as a

ground for classification are (if none, write "None"): my work includes designing of machinery for plants making aviation gas, artificial rubber, explosives, plastics, etc

INSTRUCTIONS.—You may attach to this page any statement from your employer which you think the Local Board should consider in determining your classification. Such statement will then become a part of this Questionnaire.

Series V.—OTHER OCCUPATIONAL EXPERIENCE

INSTRUCTIONS.—Every registrant shall fill in this statement. Include any formal apprenticeship served.

1. I have also worked at the following occupations other than my present job, during the last 5 years: (If none, write "None")

Occupation (Give full title; for example, investment operator, driver, etc.)	Kind or Work Done (Be specific—give a brief statement of your duties)	Years Worked	
		From—	To—
<u>Chemical Engineer</u>	<u>Research in machines for chemical ind.</u>	<u>1936</u>	<u>1937</u>
<u>Chemical Engineer</u>	<u>Research in dispersion equipment.</u>	<u>1936</u>	<u>1937</u>

Series VI.—AGRICULTURAL OCCUPATIONS

INSTRUCTIONS.—Every registrant who works on a farm shall fill in this series, in addition to filling out Series IV and V above.

1. I work on or operate a farm as—

- (Put an "X" in the correct box.)
- ☐ sole owner of the farm.
 - ☐ joint owner with _____
 - ☐ hired manager.
 - ☐ cash tenant or renter.
 - ☐ standing share tenant.
 - ☐ share cropper.
 - ☐ share tenant.
 - ☐ wage hand (hired man).
 - ☐ unpaid family worker.

(Name)

(Address)

My agreement (if any) expires _____

(Month)

(Day)

(Year)

2. I have farmed for _____ years.

3. I _____ live on the farm with which I am connected.
(Do, do not)

4. I _____ actually and personally responsible for the operation of the farm on which I work.
(Ain, am not)

5. The principal crops and livestock of the farm I operate or work on are:

Names of Crops	Acres Devoted to Each	Kind of Livestock	Number of Each Now on Farm

6. The number of hands employed on this farm is _____
(Number)

7. Other facts which I consider necessary to present fairly the agricultural enterprise I have described and my connection with it as a ground for classification are: (If none, write "None.") _____

Series VII.—DEPENDENCY (Confidential except as to names and addresses of claimed dependents.)

INSTRUCTIONS.—Every registrant shall fill in the statements numbered 1, 2, and 3 in this series.

1. (a) I am ☐ single.
☐ married.
☐ a widower.
☐ divorced.

(b) If married, I married my present wife at _____

on _____

June 15,

1937

(Month, day, year)

(City and State)

(c) I do live with her. If not, her address is _____
(Do, do not)

Series VII.—DEPENDENCY (Confidential except as to names and addresses of claimed dependents.)—Continued

2. I have 3 children who are under 18 years of age or are physically or mentally handicapped, and who live with me. (Number of children; if none, write "None".)

"DEPENDENT," AS USED IN THIS SERIES DEFINED

The word "dependent," as used in this series, means any person to whose support the registrant contributes more than merely a small part of such person's support (or to whose support the registrant would contribute were he not temporarily prevented from so doing by the registrant's physical or economic situation) who is either (a) the registrant's wife, divorced wife, parent, foster parent, or grandparent, or (b) the registrant's child, unborn child, brother, half-brother, sister, or half-sister, who is under 18 years of age or is physically or mentally handicapped, or (c) a person whose support the registrant has assumed in good faith, who is either under 18 years of age or is physically or mentally handicapped. Only a person who is a United States citizen or who lives in the United States or its Territories or possessions may be regarded as a dependent.

Based on the information contained in this Questionnaire and on other information which the Local Board may receive, the Local Board will determine whether the "dependent" is an individual who is dependent in fact for support in a reasonable manner in view of such individual's circumstances on income earned by the registrant by his work in a business, occupation, or employment.

INSTRUCTIONS.—Only those registrants who believe that one or more persons are dependent for support on the registrant's earnings from his work are required to fill in the statements numbered 3 through 13 in this series.

3. The following persons live with me in a home maintained by me and are entirely or partly dependent on my earnings from my work in my business, occupation, or employment, and have no other sources of income except as stated below:

Name	Sex	Age at last birthday	Relationship to registrant	Date when support began	Dependent's income, last 12 months other than board and lodging provided by the registrant in his home.		
					Contributed by the registrant	Earned by the dependent	Received from other sources
Naomi Brothman	F	30	wife	1937	400	1200	none
Anna Mitt	F	60	mother-in-law	1937	600	none	none
Ella Harriet Brothman	F						
Born 7/27/1941							
2-14 Hosp.							

The net cost to me of maintaining my home during the last 12 months, after deducting \$ none contributed by others than myself for the support of such dependents was \$ 2250.00

4. The following persons do not live with me in a home maintained by me, but are entirely or partly dependent on my earnings from my work in my business, occupation, or employment, and have no other sources of income except as stated below:

Name and address	Sex	Age at last birthday	Relationship to registrant	Date when support began	Dependent's income, last 12 months		
					Contributed by the registrant	Earned by the dependent	Received from other sources

5. The cause of the dependency of any persons over 18 years of age (excluding my wife) listed above is as follows: (Give the name and a full statement of cause for dependency in each case.) Anna Mitt, my mother-in-law

is physically unable to work because of age and condition of health and has no other possible source of income.

6. Of my dependents, only the following are receiving a part of their support from persons other than myself. (Give name of dependent, name and address of other person or agency contributing to his support, and amount so contributed in cash

or things of value by such other person or agency during the last 12 months.) none

Series VII.—DEPENDENCY (Confidential except as to names and addresses of claimed dependents.)—Continued

7. Of the amounts contributed by me to dependents listed above, only \$ none, contributed to (If none, write none), was in payment for my own board and/or lodging.

8. The income I earned from my work in my business, occupation, or employment during the past 12 months was \$ 4,000
9. My income from all other sources during the past 12 months was \$ 500
10. The following is a list of all property owned by (or held in trust for) either me or my dependents, the value of such property, and the net income received by either me or my dependents from such property during the past 12 months: (List this information separately as to the registrant and each dependent. Do not include clothing, personal effects, or household furnishings; or cash less than \$500. Indicate which of such property is your home.)

Name of person	Type of property	Value after deducting encumbrances	Net income from such property
<u>Abraham Brothman</u>	<u>Automobile</u>	<u>\$450.00</u>	<u>none</u>

11. I do rent the house in which I live. If so, the monthly rent is \$ 52.00, and the name and address of my landlord is Peter Cooper Corporation (Prospect Land Corporation)
12. Other facts which I consider necessary to present fairly my own status and that of my dependents as a basis for my proper classification are: (If none, write "None.") none

INSTRUCTIONS.—With respect to any dependent (other than the registrant's own wife, child, parent, or grandparent) whose support the registrant has assumed, attach to this page a statement explaining why and under what circumstances the registrant assumed such person's support. Such statement will then become a part of this Questionnaire.

SUPPORTING AFFIDAVIT OF DEPENDENTS OVER 18 YEARS OF AGE

INSTRUCTIONS.—If convenient, each dependent over 18 years of age except the registrant's wife shall swear to (or affirm) the following affidavit. The registrant shall furnish the Local Board a separate affidavit from each such dependent who does not sign the affidavit below. Blanks for this purpose will be supplied by the Local Board on request.

STATE OF _____ COUNTY OF _____

We the undersigned do solemnly swear (or affirm) each for himself and herself individually, that we have read or had read to us the foregoing statements under the heading "DEPENDENCY"; that we understand the same; that we are named as dependents; that the statements contained therein as to the name, age, residence, relationship, and dependency of each of us toward said registrant, and the statements of his contributions and the contributions by other persons to the support of each of us, and the statements of the financial and material condition of each of us, and of the income of each of us from all sources, are true.

Anna Mett
 (Signature of dependent)

 (Signature of dependent)

 (Signature of dependent)

 (Signature of dependent)

Subscribed and sworn to before me this 15 day of November 1941
Edmund Cohen
 EDWARD COHEN, NOTARY PUBLIC
 New York County Clerk No. 118
 New York County Register's No. 1-4-18
 Notary Public, New York City
 Commission expires March 30, 1944

Series VIII.—MINISTER, OR STUDENT PREPARING FOR THE MINISTRY

INSTRUCTIONS.—Every registrant who is a minister or a student preparing for the ministry shall fill in the statements in this series that apply to him.

1. (a) I (Am, am not) a minister of religion. (b) I (Do, do not) customarily serve as a minister.
- (c) I have been a minister of the (Name of sect or denomination) since (Month, day, year)
- (d) I (Have, have not) been formally ordained. If so, my ordination was performed on (Month, day, year) by (Ecclesiastical official performing the ordination) at (City and State)

Series VIII.—MINISTER, OR STUDENT PREPARING FOR THE MINISTRY.—Continued

1. I am a student preparing for the ministry in a theological or divinity school.

2. I am attending the _____, which was established _____, September 18, 1880, and is located at _____.

Series IX.—CITIZENSHIP

INSTRUCTIONS.—Every registrant shall fill in the statements numbered 1, 2, 3, and 4 in this series.

1. I was born at New York City New York U.S.A.

2. I was born on Aug 15 1913

3. My race is: ☒ White; ☐ Negro; ☐ Oriental; ☐ Indian; ☐ Filipino; Other (specify) _____

4. I am a citizen of the United States.

INSTRUCTIONS.—Every registrant who is not a citizen of the United States shall fill in the statements numbered 5, 6, 7, 8, and 9.

5. I am a citizen or subject of _____.

6. My permanent residence has been in the United States since _____.

7. I have, have not filed a declaration of intention to become a citizen of the United States (first papers). Declaration filed at _____ on _____ under No. _____.

8. I have, have not filed a petition for naturalization (second papers). Petition filed at _____ on _____.

9. I have, have not registered with the Alien Registration Division, United States Department of Justice, under the Alien Registration Act of 1940. Registration receipt card number, if received _____.

Series X.—CONSCIENTIOUS OBJECTION TO WAR

INSTRUCTIONS.—Only registrants who are conscientiously opposed to combatant or noncombatant military service by reason of their religious training and belief shall fill in this series, and shall obtain from the Local Board a special form on which to give substantiating evidence of conscientious objection. The Local Board will determine whether the registrant shall be classed as a conscientious objector on the basis of the claim made and the information contained in the special form.

I claim the exemption provided by the Selective Training and Service Act of 1940 for conscientious objectors because I am conscientiously opposed, by reason of my religious training and belief, to the type or types of service checked below:

Put an "X" in the correct box or ☐ Combatant military service ☐ Noncombatant military service

Series XI.—COURT RECORD (Confidential)

INSTRUCTIONS.—Every registrant shall fill in statement Number 1.

1. I have, have not been convicted of treason or a felony.

INSTRUCTIONS.—Every registrant who has ever been convicted of such an offense shall fill in the statements numbered 2, 3, and 4.

2. The offense was _____.

3. The approximate date of conviction was _____.

4. The name and location of the court was _____.

Series XII.—MILITARY SERVICE (Confidential)

INSTRUCTIONS.—Every registrant who now is or has been a member of the Armed Forces of the United States shall fill in the statements in this series. (Use a separate line for each term of service.)

My military service has been as follows:

ARM OR SERVICE (Army, Navy, National Guard, etc.)	DATE OF ENTRY INTO SERVICE (Month, Day, Year)	STATUS IN SERVICE (Yes, No)	DATE OF DISCHARGE (Month, Day, Year)	TYPE OF DISCHARGE (Honorable, Dishonorable, Bad conduct, or Other—Specify)

Series XIII.—STUDENT, PRESENT MEMBERS OF ARMED FORCES, CERTAIN OFFICIALS, ETC.

INSTRUCTIONS.—Every registrant who is a member of one or more of the groups named in this series shall check the appropriate item or items, and shall supply any further information called for under the item or items checked.

I am at present:

- ☐ A college or university student, having entered upon attendance for the academic year 1940-1941 at _____ (Name of college or university) _____ (City) _____ (State) _____ (Month) _____ (Day) 1940. This college or university is located at _____ (Place) _____ (Address) _____ (City) _____ (State) _____ (Zip).

I am pursuing a course of study involving _____ (Number) _____ (Hours) attendance per week leading to the _____ (Name of degree or certificate) _____ (Do, do not) request that if I am selected for

training and service, my induction be postponed until the end of the present academic year, which ends on _____ (Month) _____ (Day) 1941.

- ☐ A commissioned officer, warrant officer, pay clerk, or enlisted man of the Regular Army, the Navy, the Marine Corps, the Coast Guard, the Coast and Geodetic Survey, the Public Health Service, the federally recognized active National Guard, the Officers' Reserve Corps, the Regular Army Reserve, the Enlisted Reserve Corps, the Naval Reserve, or the Marine Corps Reserve; my rank or commission is _____ in the _____ (Name of service) _____ (Rank or commission).

- ☐ A cadet, United States Military Academy; midshipman, United States Naval Academy; cadet, United States Coast Guard Academy; man who has been accepted for admittance (commencing with the academic year next succeeding such acceptance) to the United States Military Academy as cadet, to the United States Naval Academy as midshipman, or to the United States Coast Guard Academy as cadet, and whose acceptance is still in effect; cadet of the advanced course, senior division, Reserve Officers' Training Corps or Naval Reserve Officers' Training Corps; I am _____ (A cadet, midshipman, or accepted for admittance) in _____ (Name of corps, academy, etc.).

- ☐ The Governor of a State or Territory, a member of a legislative body of the United States or of a State or Territory, a judge of a court of record of the United States or of a State or Territory or the District of Columbia; my office is _____.

REGISTRANT'S STATEMENT REGARDING CLASSIFICATION

INSTRUCTIONS.—It is optional with registrant whether or not he fills in this statement, and failure to answer shall not constitute a waiver of claim to deferred or other status. The local board is charged by law to determine the classification of the registrant on the basis of the facts before it, which should be taken fully into consideration regardless of whether or not this statement is filled in.

In view of the facts set forth in this Questionnaire it is my opinion that my classification should be Class _____ (See Instructions, page 1)

The registrant may write in the space below or attach to this page any statement which he believes should be brought to the attention of the Local Board in determining his classification.

REGISTRANT'S AFFIDAVIT

INSTRUCTIONS.—1. Every registrant shall make the registrant's affidavit. 2. If the registrant cannot read, the questions and his answers thereto shall be read to him by the officer who administers the oath.

STATE OF New York COUNTY OF Queens

I, Abraham Bortman, do solemnly swear (or affirm) that I am the registrant named and described in the foregoing statements in this Questionnaire, that I have read (or have had read to me) the statements made by and about me, and that each and every such statement is true and complete to the best of my knowledge, information and belief.

Registrant sign here Abraham Bortman (Signature or mark of registrant)

Subscribed and sworn to before me this 15 day of Nov. 1940
Eugene J. [Signature]
(Signature of officer)
Chief Clerk
(Designation of officer)

If the registrant has received assistance from an advisor, the latter will sign the following statement: I have assisted the registrant herein named in the preparation of this Questionnaire.

Advisor.

INSTRUCTIONS.—Registrant shall write nothing below this line when filling out the Questionnaire.

MINUTE OF ACTION ON REQUEST FOR EXTENSION OF TIME FOR FILING CLAIM OR PROOF

The application of _____ to have time for filing claim or proof extended to _____ is granted refused for the reason that _____

(Date)

Member.

MINUTE OF ACTION BY LOCAL BOARD

The Local Board classifies the registrant in Class III, Subdivision A, by the following vote: Ayes 2, Noes _____

(Date)

Member.

APPEAL TO BOARD OF APPEAL

I hereby appeal from the classification by the Local Board in Class _____, Subdivision _____

(Date)

(Signature of person appealing)

INSTRUCTIONS.—You must also attach here a written statement specifying the class or classes in which you think you should be placed. If you wish the appeal board to review a determination regarding your physical or mental fitness, you must fill out and sign the form for appeal on the Report of Physical Examination (Form 800) and you must attach to that form a statement specifying the class or classes in which you think you should be placed.

MINUTE OF ACTION BY BOARD OF APPEAL

The Board of Appeal classifies the registrant in Class _____, Subdivision _____, by the following vote: Ayes _____, Noes _____

(Date)

Member.

I hereby appeal to the President from classification by the Board of Appeal in Class _____, Subdivision _____
Certificates and recommendations required by section 370, S. S. R., are attached.

(Date)

(Signature of person appealing)

MINUTES OF OTHER ACTIONS

Date	Action
1/18/43	Reclassified III C3 JAN 22 43 - 57% Engr.
1/27/43	Reclassified III A MAY 28 43 57% E
1/30/43	Reclassified: pending rel
DEC 20 43	
12/10/43	Meaning - Mythenly President Royal Chemical Co. appeared - classification changed to 2 B for 6 months 6/20 DEC 1 43
9/19/44	Classification to B 1st (SD) SEP 20 44 49
1/6/45	Reclassified 30 1A 1/10 45
7/13/45	Meaning - Register and two partners - Mr. Oliver of Mr. Great Hill Publishing Co. Register is holder of filing of certificate of firm in field. Rel reclassified III B until Oct 1945 APR 4 45
1/21/45	RECLASSIFIED 4A LBA 115-7 SEP 18 45 8%

SERIAL NUMBER 4012		1. NAME (Print) Abraham Brothman		ORDER NUMBER 52
2. ADDRESS (Print) 409 41st St. LICNY N.Y.		(Number and street or R. F. D. number) (Town) (County) (State)		
3. TELEPHONE 1-6 7269	4. AGE IN YEARS 27	5. PLACE OF BIRTH N.Y.C.	6. COUNTRY OF CITIZENSHIP U.S.A.	
DATE OF BIRTH Aug 15 1913		(Month) (Day) (Year) (State or country)		
7. NAME OF PERSON WHO WILL ALWAYS KNOW YOUR ADDRESS Mrs. Abraham Brothman		8. RELATIONSHIP OF THAT PERSON Wife		
9. ADDRESS OF THAT PERSON 4309 40th St. LICNY N.Y.		(Number and street or R. F. D. number) (Town) (County) (State)		
10. EMPLOYER'S NAME Hendrick Mfg. Co.		(Name) (Address) (City) (State)		
11. PLACE OF EMPLOYMENT OR BUSINESS 30 Church St. Main Office Carbundale Penn. N.Y.		(Number and street or R. F. D. number) (Town) (County) (State)		
I AFFIRM THAT I HAVE VERIFIED ABOVE ANSWERS AND THAT THEY ARE TRUE.				
REGISTRATION CARD D. S. S. FORM 1		Abraham Brothman		

101-375640-353 REGISTRAR'S REPORT

RACE		DESCRIPTION OF REGISTRANT			
		HEIGHT (Approx.)	WEIGHT (Approx.)		COMPLEXION
White	<input checked="" type="checkbox"/>	5'8 1/2"	165		
Black	<input type="checkbox"/>	EYES		HAIR	Complexion
Hispanic	<input type="checkbox"/>	Blue	Blonde		Light
Chinese	<input type="checkbox"/>	Gray	Red		Ruddy
Japanese	<input type="checkbox"/>	Brown	Brown	<input checked="" type="checkbox"/>	Dark
Other	<input type="checkbox"/>	Black	Black		Freckled
	<input type="checkbox"/>	Gray	Gray		Light brown
	<input type="checkbox"/>	Black	Bald		Dark brown
	<input type="checkbox"/>				Black

Other obvious physical characteristics that will aid in identification:

I certify that my answers are true; that the person registered has read or has had read to him his own answers; that I have witnessed his signature or mark and that all of his answers of which I have knowledge are true, except as follows:

Register for 470 Helen J. Lutz
(Signature of registrant)
Date of registration 10-16-44
(Printed) (Month) (Day or month) (Year)

LOCAL BOARD NO. 245
4001 - 4011 STREET
QUEENSBORO COUNTY
LONG ISLAND OF NEW YORK

(The stamp of the Local Board having jurisdiction of the registrant shall be placed in the above space.)

SELECTIVE SERVICE OCCUPATIONAL QUESTIONNAIRE

Duplicate

You are to fill in the items below exactly as you filled in the same items on page 2.

You are to fill in the items on page 3 exactly as you filled in the same items on page 2.

After you return this Selective Service Occupational Questionnaire, you are to notify your local board of any change in address or of any change in the kind of work you do.

6. SOCIAL SECURITY NUMBER (If you have one) [Blank]		14. MARITAL STATUS (Mark "X" in one) <input type="checkbox"/> Single <input checked="" type="checkbox"/> Married <input type="checkbox"/> Separated <input type="checkbox"/> Divorced <input type="checkbox"/> Widower		16. EDUCATION (Mark "X" in one) Grammar school <input type="checkbox"/> High school <input checked="" type="checkbox"/> College or university <input type="checkbox"/> Graduate school <input type="checkbox"/>	
7. DATE OF BIRTH Month: [Blank] Day: [Blank] Year: <u>1933</u>		15. DEPENDENTS (If none, enter "0") 1. Name of first dependent under 18 years of age living with you: [Blank] 2. Number of persons (all ages, including children living in the household) dependent on you: <u>1</u> 3. Number of persons (all ages, including children living in the household) dependent on you but not living with you: <u>0</u>		17. EMPLOYMENT (Check in PRESENT JOB) <input type="checkbox"/> If you have a job, mark "X" in one: <input type="checkbox"/> As an employer, working for wages, salary, commission, board, room, or other compensation. <input type="checkbox"/> As an independent contractor, working for yourself, not hired by anyone, and not hiring help. <input type="checkbox"/> As a proprietor or independent employer, hiring and employing others. <input type="checkbox"/> Working for head of your family, but not receiving pay.	
8. RACE (Mark "X" in one) <input checked="" type="checkbox"/> White <input type="checkbox"/> Negro <input type="checkbox"/> Other (Specify): [Blank]		18. CITIZENSHIP (Mark "X" in one) <input checked="" type="checkbox"/> Citizen of United States <input type="checkbox"/> Alien (Specify): [Blank]		19. LENGTH OF SERVICE (If you are in the service, mark "X" in one) <input type="checkbox"/> Less than 1 year <input type="checkbox"/> 1 year to 2 years <input type="checkbox"/> 2 years to 3 years <input type="checkbox"/> 3 years to 4 years <input type="checkbox"/> 4 years to 5 years <input type="checkbox"/> 5 years or more	
9. PRESENT WORK STATUS (Mark "X" in one) <input type="checkbox"/> Am now on WPA, CCC, NYA, or other work-relief program. <input type="checkbox"/> Am now working full time or part time, or worked during past 7 days (except on WPA, CCC, NYA, etc.). <input type="checkbox"/> Do not have a job, but am looking for work. <input type="checkbox"/> Have a job (except on WPA, CCC, NYA, etc.), but am temporarily idle because of illness, short lay-off, weather, vacation, etc. <input type="checkbox"/> Am now a full-time student. <input type="checkbox"/> Unable to work because of permanent disability. <input type="checkbox"/> Do not have a job and am not looking for work.		20. LENGTH OF SERVICE (If you are in the service, mark "X" in one) <input type="checkbox"/> Less than 1 year <input type="checkbox"/> 1 year to 2 years <input type="checkbox"/> 2 years to 3 years <input type="checkbox"/> 3 years to 4 years <input type="checkbox"/> 4 years to 5 years <input type="checkbox"/> 5 years or more		21. LENGTH OF SERVICE (If you are in the service, mark "X" in one) <input type="checkbox"/> Less than 1 year <input type="checkbox"/> 1 year to 2 years <input type="checkbox"/> 2 years to 3 years <input type="checkbox"/> 3 years to 4 years <input type="checkbox"/> 4 years to 5 years <input type="checkbox"/> 5 years or more	

DO NOT WRITE IN THIS BLANK SPACE

YOUR PRESENT JOB (If you are now working on it, fill in the job.)

22. TITLE OF YOUR PRESENT JOB: (See instruction 1.)
 If you do not have a job, enter "unemployed".
CHEMICAL ENGINEER Date: 1933

23. DUTIES OF YOUR PRESENT JOB: (See instruction 1.)
DESIGN OF PLANTS & MACHINERY FOR CHEMICAL, PETROLEUM, RUBBER, METALLURGICAL, ETC. INDUSTRIES

24. PRODUCT(S) YOU WORK ON OR ENGINEERING **25. INDUSTRY(IES) OPERATED OR** MANUFACTURING (If any)

26. PRESENT EMPLOYER: (See instruction 1.)
 Name of company or proprietor: HENDRICK MFG. CO.

Address of place of work: 30 CHURCH ST. NEW YORK, MANHATTAN, N.Y.

27. FOR WHICH YOU ARE BEST FITTED (Mark "X" in the box of the job you are best fitted to do, or in the box of the job you are best fitted to do in the future.)
DESIGN OF PLANTS & MACHINERY FOR CHEMICAL, PETROLEUM, RUBBER, METALLURGICAL, ETC. INDUSTRIES

28. TITLE OF JOB FOR WHICH YOU ARE BEST FITTED: (See instruction 1.)
DESIGN OF CHEMICAL MACHINERY

29. IS THIS JOB THE SAME AS YOUR PRESENT JOB? ☒ Yes ☐ No ☐ No, fill in item 27.

30. DUTIES OF JOB FOR WHICH YOU ARE BEST FITTED: (See instruction 1.)
DESIGN OF CHEMICAL MACHINERY

FOR WHICH YOU ARE NEXT BEST FITTED (Mark "X" in the box of the job you are next best fitted to do, or in the box of the job you are next best fitted to do in the future.)

31. TITLE OF JOB FOR WHICH YOU ARE NEXT BEST FITTED: (See instruction 1.)
CHEMICAL PLANT OPERATOR

32. IS THIS JOB THE SAME AS YOUR PRESENT JOB? ☐ Yes ☒ No ☐ No, fill in item 27.

33. DUTIES OF JOB FOR WHICH YOU ARE NEXT BEST FITTED: (See instruction 1.)
CHEMICAL PLANT OPERATOR, CHEMICAL PLANT WORK, MACHINERY MAINTENANCE

23. For PROFESSIONAL AND TECHNICAL Occupations, check the box in front of the number of years you worked in each of the following fields of work:
- | | | |
|---------------------------------------|--------------------------------------|--|
| <input type="checkbox"/> Agriculture | <input type="checkbox"/> Mechanical | <input type="checkbox"/> Transportation |
| <input type="checkbox"/> Architecture | <input type="checkbox"/> Electrical | <input type="checkbox"/> Engineering |
| <input type="checkbox"/> Bookbinding | <input type="checkbox"/> Electronics | <input type="checkbox"/> Journalism |
| <input type="checkbox"/> Carpentry | <input type="checkbox"/> Estimating | <input type="checkbox"/> Law |
| <input type="checkbox"/> Clothing | <input type="checkbox"/> Finance | <input type="checkbox"/> Medicine |
| <input type="checkbox"/> Cosmetology | <input type="checkbox"/> Food | <input type="checkbox"/> Music |
| <input type="checkbox"/> Drafting | <input type="checkbox"/> Health | <input type="checkbox"/> Photography |
| <input type="checkbox"/> Education | <input type="checkbox"/> Hotel | <input type="checkbox"/> Public Administration |
| <input type="checkbox"/> Engineering | <input type="checkbox"/> Insurance | <input type="checkbox"/> Retail |
| <input type="checkbox"/> Geology | <input type="checkbox"/> Labor | <input type="checkbox"/> Science |
| <input type="checkbox"/> Graphic Arts | <input type="checkbox"/> Law | <input type="checkbox"/> Social Work |
| <input type="checkbox"/> Health | <input type="checkbox"/> Library | <input type="checkbox"/> Teaching |
| <input type="checkbox"/> Hotel | <input type="checkbox"/> Medicine | <input type="checkbox"/> Training |
| <input type="checkbox"/> Insurance | <input type="checkbox"/> Music | <input type="checkbox"/> Transportation |
| <input type="checkbox"/> Journalism | <input type="checkbox"/> Photography | <input type="checkbox"/> Writing |

24. Do not fill in the box until you have completed item 24 below.

Enter in boxes A, B, C, and D the number that is before each job for which you reported experience or training in item 23 above. For example, if you reported experience or training as a machinist, enter in box A the number "174" (the number that is before "Machinist" in item 23). Enter the number of the job for which you are best fitted in box B, etc. If you reported experience or training for more than one job, enter the numbers for only four. If you did not report experience or training for any job in item 23, enter "none" in box B.

A	B	C	D
330	316		

If you are now working at one of the jobs for which you enter a number in box A, B, C, or D, write the box in which you enter the number of this job.

(a) Serial No. 4012 (b) Order No. 52

25. Read the following list of jobs and fields of work carefully. If you are now working or have ever worked at any job listed below, write the number of years you worked in that job in the box in front of the name of the job. For example, if you have worked 6 years as an electrician, write the number of years as "6" in the box in front of "Electrician". If you have worked less than 1 year, write the number of months in the box. If you have worked at more than one job on the list, write the number of years or months in front of each. (This list does not cover all kinds of work. Perhaps you will find nothing to mark on it. But notice that some of the names on the list cover jobs which often go by other names; for example, a railroad brakeman would mark "Trainman".) If this list does not include any or all of the jobs or fields of work in which you have had experience or training, enter in item 26 below any others that you did not describe on page 2.

1. Agriculture	26. Shipyard	51. Truck driver	76. Welder
2. Architecture	27. Shipyard	52. Truck driver	77. Welder
3. Bookbinding	28. Shipyard	53. Truck driver	78. Welder
4. Carpentry	29. Shipyard	54. Truck driver	79. Welder
5. Clothing	30. Shipyard	55. Truck driver	80. Welder
6. Cosmetology	31. Shipyard	56. Truck driver	81. Welder
7. Drafting	32. Shipyard	57. Truck driver	82. Welder
8. Education	33. Shipyard	58. Truck driver	83. Welder
9. Engineering	34. Shipyard	59. Truck driver	84. Welder
10. Geology	35. Shipyard	60. Truck driver	85. Welder
11. Graphic Arts	36. Shipyard	61. Truck driver	86. Welder
12. Health	37. Shipyard	62. Truck driver	87. Welder
13. Hotel	38. Shipyard	63. Truck driver	88. Welder
14. Insurance	39. Shipyard	64. Truck driver	89. Welder
15. Journalism	40. Shipyard	65. Truck driver	90. Welder
16. Labor	41. Shipyard	66. Truck driver	91. Welder
17. Law	42. Shipyard	67. Truck driver	92. Welder
18. Library	43. Shipyard	68. Truck driver	93. Welder
19. Medicine	44. Shipyard	69. Truck driver	94. Welder
20. Music	45. Shipyard	70. Truck driver	95. Welder
21. Photography	46. Shipyard	71. Truck driver	96. Welder
22. Public Administration	47. Shipyard	72. Truck driver	97. Welder
23. Retail	48. Shipyard	73. Truck driver	98. Welder
24. Science	49. Shipyard	74. Truck driver	99. Welder
25. Social Work	50. Shipyard	75. Truck driver	100. Welder

LIST OF SELECTED OCCUPATIONS

- | | | | |
|---------------------------|--------------|------------------|-------------|
| 1. Agriculture | 26. Shipyard | 51. Truck driver | 76. Welder |
| 2. Architecture | 27. Shipyard | 52. Truck driver | 77. Welder |
| 3. Bookbinding | 28. Shipyard | 53. Truck driver | 78. Welder |
| 4. Carpentry | 29. Shipyard | 54. Truck driver | 79. Welder |
| 5. Clothing | 30. Shipyard | 55. Truck driver | 80. Welder |
| 6. Cosmetology | 31. Shipyard | 56. Truck driver | 81. Welder |
| 7. Drafting | 32. Shipyard | 57. Truck driver | 82. Welder |
| 8. Education | 33. Shipyard | 58. Truck driver | 83. Welder |
| 9. Engineering | 34. Shipyard | 59. Truck driver | 84. Welder |
| 10. Geology | 35. Shipyard | 60. Truck driver | 85. Welder |
| 11. Graphic Arts | 36. Shipyard | 61. Truck driver | 86. Welder |
| 12. Health | 37. Shipyard | 62. Truck driver | 87. Welder |
| 13. Hotel | 38. Shipyard | 63. Truck driver | 88. Welder |
| 14. Insurance | 39. Shipyard | 64. Truck driver | 89. Welder |
| 15. Journalism | 40. Shipyard | 65. Truck driver | 90. Welder |
| 16. Labor | 41. Shipyard | 66. Truck driver | 91. Welder |
| 17. Law | 42. Shipyard | 67. Truck driver | 92. Welder |
| 18. Library | 43. Shipyard | 68. Truck driver | 93. Welder |
| 19. Medicine | 44. Shipyard | 69. Truck driver | 94. Welder |
| 20. Music | 45. Shipyard | 70. Truck driver | 95. Welder |
| 21. Photography | 46. Shipyard | 71. Truck driver | 96. Welder |
| 22. Public Administration | 47. Shipyard | 72. Truck driver | 97. Welder |
| 23. Retail | 48. Shipyard | 73. Truck driver | 98. Welder |
| 24. Science | 49. Shipyard | 74. Truck driver | 99. Welder |
| 25. Social Work | 50. Shipyard | 75. Truck driver | 100. Welder |

LIST OF SELECTED OCCUPATIONS

- | | | | |
|---------------------------|--------------|------------------|-------------|
| 1. Agriculture | 26. Shipyard | 51. Truck driver | 76. Welder |
| 2. Architecture | 27. Shipyard | 52. Truck driver | 77. Welder |
| 3. Bookbinding | 28. Shipyard | 53. Truck driver | 78. Welder |
| 4. Carpentry | 29. Shipyard | 54. Truck driver | 79. Welder |
| 5. Clothing | 30. Shipyard | 55. Truck driver | 80. Welder |
| 6. Cosmetology | 31. Shipyard | 56. Truck driver | 81. Welder |
| 7. Drafting | 32. Shipyard | 57. Truck driver | 82. Welder |
| 8. Education | 33. Shipyard | 58. Truck driver | 83. Welder |
| 9. Engineering | 34. Shipyard | 59. Truck driver | 84. Welder |
| 10. Geology | 35. Shipyard | 60. Truck driver | 85. Welder |
| 11. Graphic Arts | 36. Shipyard | 61. Truck driver | 86. Welder |
| 12. Health | 37. Shipyard | 62. Truck driver | 87. Welder |
| 13. Hotel | 38. Shipyard | 63. Truck driver | 88. Welder |
| 14. Insurance | 39. Shipyard | 64. Truck driver | 89. Welder |
| 15. Journalism | 40. Shipyard | 65. Truck driver | 90. Welder |
| 16. Labor | 41. Shipyard | 66. Truck driver | 91. Welder |
| 17. Law | 42. Shipyard | 67. Truck driver | 92. Welder |
| 18. Library | 43. Shipyard | 68. Truck driver | 93. Welder |
| 19. Medicine | 44. Shipyard | 69. Truck driver | 94. Welder |
| 20. Music | 45. Shipyard | 70. Truck driver | 95. Welder |
| 21. Photography | 46. Shipyard | 71. Truck driver | 96. Welder |
| 22. Public Administration | 47. Shipyard | 72. Truck driver | 97. Welder |
| 23. Retail | 48. Shipyard | 73. Truck driver | 98. Welder |
| 24. Science | 49. Shipyard | 74. Truck driver | 99. Welder |
| 25. Social Work | 50. Shipyard | 75. Truck driver | 100. Welder |

NATIONAL HEADQUARTERS
SELECTIVE SERVICE SYSTEM
2151 AND C STREETS N.W.
WASHINGTON, D. C.

MAIL TO:

LOCAL BOARD No. 245
43-01 - 46th STREET
QUEENS COUNTY
LONG ISLAND CITY, N. Y.

Local Board No. 245	2c
Queens County	001
123-2 1945	245
80-97 Steinway Street	
Long Island City, N.Y.	
(Local Board Data Stamp With Case)	



SELECTIVE SERVICE SYSTEM

 Order to Report
Preinduction Physical Examination

April 2, 1945

(Date of mailing)

The President of the United States,

 To Abraham Brothman 32
 (First name) (Middle name) (Last name) (Order No.)

GREETING:

You are hereby directed to report for preinduction physical examination at

 at 6:30 A. m. on the 11th of April, 1945
 (Hour of reporting) (Day) (Month)

(Member or clerk of Local Board)

IMPORTANT NOTICE TO REGISTRANT

Registrant who believes he has a disqualifying defect.—If you believe that you have some defect which will disqualify you for service you may, on or before the _____ day of _____, 194____, appear in person at the office of the Local Board, or, if you are unable by reason of such defect to personally appear, you may submit an affidavit from a reputable physician or an official statement by an authorized representative of a Federal or State agency to the effect that such physician has personal professional knowledge or such authorized representative has official knowledge of your defect, the character thereof, and that you are unable to personally appear due to the character of the defect. The Local Board may send you to the Local Board examining physician, and, if it does so, it shall be your duty to appear at the time and place designated by the Local Board and to submit to such examination as the examining physician shall direct. If the Local Board determines that your defect does disqualify you for service you will receive a Notice of Classification (Form 57) advising you that you have been placed in Class IV-F. Unless prior to the date fixed for your preinduction physical examination, you receive such a Notice of Classification (Form 57) advising you that you have been placed in Class IV-F, you must report for your preinduction physical examination as directed.

Every registrant.—When you report for preinduction physical examination you will be forwarded to an induction station where you will be given a complete physical examination to determine whether you are physically fit for service. If you sign a Request for Immediate Induction (Form 219), and you are found qualified for service, you will be inducted immediately following the completion of your preinduction physical examination. Otherwise, upon completion of your preinduction physical examination, you will be returned to this Local Board. You will be furnished transportation and meals and lodgings when necessary. Following your preinduction physical examination you will receive a certificate issued by the commanding officer of the induction station showing your physical fitness for service or lack thereof.

If you fail to report for preinduction physical examination as directed, you will be delinquent and will be immediately ordered to report for induction into the armed forces. You will also be subject to fine and imprisonment under the provisions of section 11 of the Selective Training and Service Act of 1940, as amended.

If you are so far from your own Local Board that reporting in compliance with this order will be a hardship and you desire to report to the Local Board in the area in which you are now located, take this order and go immediately to that Local Board and make written request for transfer for preinduction physical examination.

ADVISORY BOARD CASE RECORD

Name of Registrant Robert Bodman Order No. 32 Age 29
 Temporary Category C3 Hearing Notice Mailed 11/7/43
 Date of A.B. Hearing 11/2/43 Heard by A.B. Member W H Markle
 Selective Board Hearing: Yes No Date S.B. Classification 3A
 A.B. Recommended Category C4

INFORMATION FURNISHED BY REGISTRANT

Occupation Engineer How Long in Present Employment 10 yrs
 Defense Work: Yes ☒ No ☐ Has Employer Requested Deferment: Yes ☐ No ☒
 Name of Employer The Chemurgy Co., Inc. Kind of Business Engineering
 Address of Employer 470 Lexington Ave NYC
 Registrant's Salary \$5000.00 yr Other Income \$1000.00
 Source of Other Income Special Account, plus regular salary
 Reason for Present S-A Classification Injured

REGISTRANT'S STATUS

Married: Yes ☒ No ☐ Date of Marriage May 1937
 Living with Wife: Yes ☒ No ☐ Separated ☐ Divorced ☐ Widower ☐
 If Not Living with Wife Does Registrant Contribute: Yes ☐ No ☐ Reason
 Had Registrant Been Classified at Time of Marriage: Yes ☒ No ☐
 Had Registrant Received Questionnaire Previous to Marriage: Yes ☒ No ☐
 Does Wife Work: Yes ☐ No ☒ Income Occupation
 Any Special Training: Yes ☐ No ☐ Training or Profession
 When Did Wife Last Work 1940 Occupation Stenographer Income \$25.00 WK
 How Long at This Work 5 yrs Reason for Giving Up Employment CHILD 7/27/41
 Children: Yes ☒ No ☐ Number 1 Ages 18 mos Living with Registrant: Yes ☒ No ☐
 If Not Living with Registrant Does He Contribute to Their Support: Yes ☐ No ☐
 Amount Contributed Explanation

Present Rent \$60.00 Mo Other Obligations (Insurance, Debts, etc)
INS. \$150.00 yr

Other Information (Include Explanation of Marriage if Induction was Imminent)

Collateral Dependents: Yes ☒ No ☐ Number 1 Living with Registrant: Yes ☒ No ☐

Dependents' Age and Relationship to Registrant MOTHER-IN-LAW (62)

Reason for Dependency AGE CONDITION OF HEALTH ARTHRITIS

Dependents' Annual Income _____ Rent Paid for Dependents' Home _____

Contributed by Registrant \$40.00 Mo Date When Contributions Began 1937

Source of Other Income Above Registrant's Contribution _____

Do Dependents Have Bank Account: Yes ☐ No ☒ Amount _____

Other Property or Tangible Assets Owned by Dependents _____

Has Registrant Brothers or Sisters: Yes ☐ No ☒

Are They Reported in Questionnaire: Yes ☐ No ☐

Have Dependents Other Relatives They Could Live with or From Whom They Could Receive Help in Event of Registrant's Induction: Yes ☐ No ☒ Partially ☐

Additional Information _____

Date 1/12/43

Sworn and subscribed to before me this 12 day of

January 1943

J. W. Mende

Abraham Brothman
Registrant's Signature

SPECIAL NOTES BY A.B.

HENDRICK MANUFACTURING COMPANY

PERFORATED METALS

CHILLES OF PERFORATED METAL
"MITCO" INTERLOCKED STEEL GRATING
LIGHT AND HEAVY STEEL PLATE CONSTRUCTION

CARBONDALE, PA.

COMPANY'S
BEST TO CHANGE WITH
BEST NOTICE
ALL AGREEMENTS
ARE CONTINGENT ON
ON OTHER AGREEMENTS
AND OTHER TERMS ON
YOUR OWN TERMS.

Branch Offices
NEW YORK
PITTSBURGH
PHILADELPHIA
HARTFORD, CT.

November 16, 1940

Mr. S. Horak, Chairman
Selective Service Board #245
Public School #150
43-01 43rd Ave.
Long Island City
Long Island, N.Y.

LOCAL BOARD NO. 245
P.S. 150, 40-01 43rd Ave.

NOV 18 1940

Long Island City, New York

Dear Sir:

We respectfully ask deferment for our
Mr. A. Brothman (District Order #53, Federal Order #132)
for the following reasons:

Mr. Brothman is employed by our company
in the capacity of Engineer in charge of machinery design
for our Chemical and Process Equipment Division. This
covers the manufacture by our company of the following:

- Equipment for the Production of Aviation Gasoline
- Equipment for the production of General Petroleum Products
- Equipment for the Production of Artificial Rubber
- Equipment for the production of Plastics
- Equipment for the production of Foods
- Equipment for the production of General Processing and Mixing

It would be most difficult to replace
Mr. Brothman as he is the inventor of patented features
incorporated in this equipment and, therefore, is the only
one familiar with our design. We therefore, trust that
our request may have your favorable consideration.

Yours very truly,
HENDRICK MFG. COMPANY

D.L. Bassett
D.L. Bassett
Asst. Secretary
(See affidavit attached)

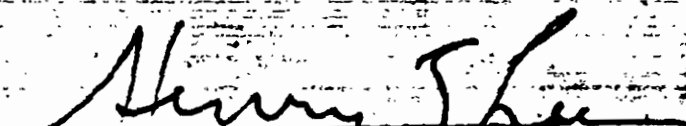
DLB/ejf

Nov 18 1940

November 16, 1940

Carbon County, Pa.

I certify that the above is the signature of D.L. Bassett,
Assistant Secretary of the Hendrick Manufacturing Company,
Carbondale, Pennsylvania.


NOTARY PUBLIC

My Commission Expires March 5, 1941

THE CHEMURGY DESIGN CORPORATION

A DIVISION OF GOLWYNNE CHEMICALS CORPORATION

420 LEXINGTON AVENUE
NEW YORK CITY

PHONE LEXINGTON 8-5740

ENGINEERS & FABRICATORS OF
PROCESSING PLANTS
PROCESS EQUIPMENT

January 11, 1943

To Whom It May Concern:

Mr. Brothman is employed by the Chemurgy Design Corporation as a Chief Design Engineer and Vice-President. The Chemurgy Design Corp. acts and has acted as consulting design engineers to:

1. International Engineering, Inc. of Layton, Ohio who manufacture Process Equipment, Blowers, Fans, Mine Cars, and Mills. International Engineering has just completed construction on several large Mills for the U.S. Navy and is presently engaged in fulfilling for the government the largest order for industrial fans and blowers ever placed by the U.S. Government.
2. Graver Tank & Mfg. Co. of East Chicago, Indiana and Cattasauqua, Pa. who operate one of the largest welding and fabrication shops in the country and who are shipping approximately 150 tons of fabricated steel a day. Graver Tank & Mfg. Co. does also furnish water-treating systems for municipalities and for Government Industrial Power Houses. We are enclosing herewith a copy of a report which Mr. Brothman and the writer prepared on a water-treating system which was installed at the Central Power House of the Philadelphia Navy Yard at Phila., Pa.
3. The Rufert Chemical Co., Div. of the Seymour Mfg. Co. of Seymour, Conn. who produce Nickel Hydrogenation Catalyst for the conversion of vegetable and animal oils, for the hydrogenation of petroleum products such as Aviation Gasoline, and for the synthesis of various essential Defense Chemicals. Please see attached letter from the Rufert Chemical Company in re Mr. Brothman's connection with the former's present work.
4. The Pulverized Metals Corp. of Centerbrook, Conn. who produce pulverized magnesium powder for the loading of Incendiary Bombs, Tracer Shells, and Tracer Bullets and whose entire production is consumed by the Allied Nations under Lease-Lend arrangements.

January 11, 1943

Please see attached letter from the Pulverized Metals Corporation, concernign work Mr. Brothman has been delegated by the Chemurgy Design Corp. to do for them.

5. Chicago Pump Company of Chicago, Ill. who manufacture industrial pumps and equipment for industrial and municipal sewage disposal systems. The Chicago Pump Co. is presently under 100% production for the Defense Program, their entire production being under a blanket priority system.
6. Hendrick Mfg. Co. of Carbondale, Pa. who produce fabricated steel products for use either directly or indirectly in Chemical Process Equipment, Airplanes, Petroleum Equipment, Armaments, etc. See attached miscellaneous letters addressed to the writer and/or Mr. Brothman chosen at random from our current year's files.

The Chemurgy Design Corporation has or is either directly or thru its clients engaged in the manufacture or design of products and projects typified by the following partial list, not including projects mentioned above in connection with our clients' listings:

1. the building, designing, and engineering of equipment for the manufacture of chemicals vital to the manufacture of Synthetic Rubber for the Naugatuck Chemical Div. of the United States Rubber Company of Naugatuck, Conn. Please see attached Priority Rating.
2. the building, designing, and engineering of equipment for the manufacture of Glycerine for the Colgate-Palmolive-Peet Co. at Jersey City, N.J. and Jeffersonville, Ind.
3. the building, designing, and engineering of equipment for the manufacture of explosives for the Picatinny Arsenal, Bureau of Ordnance of the U.S. Gov't. at Dover, N.J.
4. the building, designing, and engineering of a plant for the manufacture of Synthetic Resins for the Synvar Corp. of Wilmington, De.
5. the designing (installation and construction to begin shortly) of a Plant for recovering Spent Nickel Catalyst for the Rufert Chemical Company, Div. of the Seymour Mfg. Co.
6. the development, engineering, and design of the Brothman-Weber Continuous System for the production of Buna Synthetic Rubbers which is currently being employed by all the Defense Plant Corporation Plants producing Buna Synthetic Rubber. Please see correspondence relative to same with Chemical & Metallurgical Engineering and the War Production Board.

January 11, 1943

Reduced to the most basic terms, Mr. Brothman functions in our organization as Chief Engineer and Vice-President and is integrally essentially associated with the discharging of the various tasks and projects which the above material indicates. May the writer point out that the inability of our organization, under present conditions, to recruit men of even a much less specialized and rounded technical level than that enjoyed by Mr. Brothman has resulted in a general 12 to 14 hour working day six days a week for our entire organization.

Yours very truly,

THE CHEMURGY DESIGN CORPORATION

A.P. Veber

A.P. Veber
Secretary

APW:lh
encs.

JAN 22 1943

MAY 28 1943

GOLWYNNE
CHEMICALS CORPORATION

420 LEXINGTON AVENUE, NEW YORK, N. Y.

CABLE ADDRESS "GOLWYNNE"

January 11, 1943

To Whom it May Concern:

Mr. A. Brothman has, since July of 1942, served as consulting engineer to our associated company, the Pulverized Metals Corporation, and, as such, supervised the re-design of certain sections of our plant at Centerbrook, Connecticut. His work in improving and expanding the production of pulverized magnesium powder by our plant has been singularly successful and is still in progress. In view of the expanding needs of the Defense Program for pulverized magnesium powder and in view of our previous experiences in attempting to secure competent technical aid in advancing our production problems, it is our considered opinion that Mr. Brothman's supervision has been and shall continue to be uniquely vital to us.

Pulverized magnesium powder, as produced by us, goes entirely for the production of Incendiary Bombs, Tracer Bullets, and Tracer Shells. Our present production is totally under contract to the British Purchasing Commission in this Country and goes ultimately to the Australian Government.

Trusting that you will, in view of the above, give our urgent requirements in connection with Mr. Brothman's continued services your kindest consideration, we are

Yours very truly,

GOLWYNNE CHEMICALS CORPORATION


Henry A. Golwynne
President

lh

RUPERT CHEMICAL COMPANY

CATALYST MANUFACTURERS



SEYMOUR BRIGHT NICKEL PROCESS

SEYMOUR, CONN.

CABLE ADDRESS: NYNOD, NEW YORK

January 11, 1943

To Whom It May Concern:

As a member of The Chemurgy Design Corporation, Mr. A. Brothman, has for the past seven months been in charge of the process chemical engineering, mechanical designing, and supervision during the erection of a Nickel Recovery Plant which we are building at the Government's request. This plant will be capable of recovering from Spent Hydrogenation Catalyst, used in the hydrogenation of oils, approximately 1,500,000 lbs. of Nickel, and 7,500,000 lbs. of oil, fats, and waxes annually.

Mr. Brothman is responsible for the supervision and trial operation of the complete project when finished; and it is essential and imperative that he continue in his present capacity.

The amount of material which will be recovered, and the highly critical material of the nickel and oils in the defense program which will be recovered, prompts us to direct this plea to you at this time.

THE RUPERT CHEMICAL COMPANY

Technical Director

NLP:OS

REGISTRANT'S AFFIDAVIT—FAMILY STATUS AND DEPENDENTS

LOCAL BOARD No. 245
40th STREET
LONG ISLAND CITY, N. Y.

(Local Board Data Stamp and Order)

Name:

Order No.

52

ABRAHAM BROTHMAN

(First)

(Middle)

(Last)

4108

4255

(Number and street or R. F. D. Route)

L.I.C.

6

NY

(City or town)

(County)

(State)

NOTICE TO REGISTRANT

You are directed to fill out this form and mail it to the above local board on or before the date shown below. Be sure that it is complete in every detail and that your signature is properly notarized.

This affidavit must be returned on or before

6/28/43

Queens County

Ct.

State of

County of

JUN 29 1943

245

43-01 40th Street

Long Island City, N. Y.

FAMILY STATUS AND DEPENDENTS (Confidential except as to names and addresses)

1. I am— ☐ single; ☐ widower; ☐ divorced;

(Put an X in the correct box) ☒ married. We were married at NEW YORK CITY on MAY 29TH, 1937

(Place)

(Date)

☒ I live with my wife. We have lived together continuously since MAY 29TH, 1937

☐ I do not live with my wife. Her address is _____

Explanation _____

2. I have 1 children (my own or adopted) under 18 years of age. Of these children, 1 live with me in my home.

(Number)

(Number)

INSTRUCTIONS.—Every registrant who lives in a family group and contributes to the support of that group shall fill in statement No. 3. "Family group" as used in this statement means two or more persons related by blood, marriage, or adoption, who live together.

3. The following is a list of all members of the family group in which I live (list yourself first):

NAME	Sex	Date of Birth Mo. Day Yr.	Relationship to me	Total amount earned by each person in past 12 months	Total amount of all other income re- ceived by each per- son in past 12 months	Total amount con- tributed by each person to the family group in past 12 months
ABRAHAM BROTHMAN (Enter your own name on above line)	Male	8 15 13	Self	\$6,000.00		FULL AMOUNT EARNED BY ME
NAMI METT BROTHMAN	FEMALE	10 19 13	WIFE	NOTHING		
ELSA HARRIET BROTHMAN	FEMALE	7 27 41	DAUGHTER	NOTHING		
ANNA KITTAS METT	FEMALE	10 27 1885	MOTHER-IN-LAW	NOTHING		

INSTRUCTIONS.—Every registrant who contributes to the support of one or more persons who are not members of the family group listed above shall fill in statement No. 4.

4. The following persons who are not members of the family group listed above depend wholly or partly for support on what I earn by my work in my business, occupation, or employment; they had no other sources of income during the past 12 months, except as stated below:

NAME	Sex	Age	Relationship to me	Date when I began contributing to the person's support	Amount contributed by me to this person during past 12 months	All other income re- ceived by this per- son during past 12 months

NAME OF DONOR	AGE	Relationship to Donor	Present Address	Approximate average earnings of each person per week	How much does each person contribute to the support of any of the persons listed in statements 2 and 4
HARRY BROTHMAN	56	FATHER	1565 TOWNSEND AVE, Bk	IRREGULARLY EMPLOYED	NOTHING
BEATRICE RUTH BROTHMAN SCHNEB	27	SISTER	" " "	HOUSEWIFE	"

EMPLOYMENT STATUS OF REGISTRANT'S WIFE

1. My wife is not working at a job for pay.
(is or is not)

2. She is employed by _____ as _____
(Employer) (Position or kind of work)

3. Her average earnings are \$ _____ per _____ Her Social Security No. is _____
(Week, month, or year)

4. She was last employed on MARCH 1ST, 1971.
(Date employment ended—if never employed, so state)

by AMALGATED BANK as STENOGRAPHER
(Name of wife's former employer) (Wife's former position or kind of work)

10. She left her employment for the following reasons: VOLUNTARY — PREGNANCY
(Voluntarily—discharged—state reason)

EMPLOYMENT STATUS OF REGISTRANT.

11. The job I am now working at is CHEMICAL ENGINEER
(Give full title of your job, such as construction draftsman, automatic turret lathe operator, dairy farm hand, stationary engineer, millman, etc.)

12. I do the following kind of work DESIGN MACHINERY FOR CHEMICAL, PETROLEUM, SYNTHETIC RUBBER, AND OTHER PROCESS INDUSTRIES
(Be specific in giving description of your duties—state exactly what you do)

13. My employer is CHEMURGY DESIGN CORP.
(Name of company or proprietor—if working for yourself, write "self-employed")
420 LEX. AVE., NEW YORK CITY
(Address of place of employment—street, rural route, city, and State)

14. The business in which I work is ENGINEERING & PLANT CONSTRUCTION
(Give specific kind of farm, factory, mine, public utility, transportation, store, or other establishment or business in which you work)

15. I have worked at this job since MAY, 1930 My average earnings are \$ 6000.00 per YEAR
(Date) (Week, month, or year)

REGISTRANT'S AFFIDAVIT

INSTRUCTIONS.—1. Every registrant shall make the registrant's affidavit. 2. If the registrant cannot read, the questions and his answers thereto shall be read to him by the officer who administers the oath.

I, _____, do solemnly swear (or affirm) that I am the registrant named and described in the foregoing statements in this affidavit; that I have read (or have had read to me) the statements made by and about me, and that each and every such statement is true and complete to the best of my knowledge; Infor-

motion, and belief. The statements made by me in the foregoing are in my own handwriting.

Registrant sign here ~~PDF~~

*Subscribed and sworn to before me this 26 day of June, 1943

(Signature of officer)

INTERNATIONAL ENGINEERING, INC.

DAYTON, OHIO.
U.S.A.

June 17, 1944

CABLE ADDRESS
INTERENGINE DAYTON OHIO

Local Board No. 245, Queens County
43-01 46th Street
Long Island City, N.Y.

Re: Abraham Brothman, No. 52

Gentlemen:

Mr. Abraham Brothman, the above, is our technical designer of equipment for the chemical and process industries, we manufacturing at the present time such equipment for Government Arsenals, the leading manufacturers of explosives, aluminum, penicillin, manganese, synthetic rubber, plastics for bombers, etc.

The loss of Mr. Brothman would mean delays for many months in the obtainment of a technician of equal merit, with the resultant confusion in the process industries that we serve.

Men of Brothman's type are quite rare, and his induction will mean a great detriment to the operation of this Company as well as the kindred industries whom we serve.

This being an exceedingly exceptional case, we hope that you can see your way clear to grant him a further deferment.

Very truly yours,
INTERNATIONAL ENGINEERING, INC.


R.H. McElroy, President

REM
EM

GRAVER TANK & MFG. CO., INC.

MAR 1 1944

GENERAL STEEL PLATE CONSTRUCTION

EAST CHICAGO, INDIANA

February 26th, 1944

Selective Service System
Local Board No. 245
43-01 46th Street
Long Island City 4, New York

RE: Abraham Brothman
Order No. 52

Gentlemen:

On October 29th, 1943 the Selective Service Headquarters gave tentative approval to our preliminary Replacement Schedule and assigned Acceptance No. 538. The final Replacement Schedule was approved by the State Director and re-assigned Acceptance No. 538, effective December 8th, 1943.

We have submitted Form 42-A for the above employee showing the tentative acceptance date of October 29th, 1943 whereas it should have shown the final approval date of December 8th, 1943. Will you kindly correct your records accordingly and extend the present classification of this employee for the authorized period, effective December 8th, 1943.

We would appreciate it if you will kindly acknowledge receipt of this memorandum on the attached copy of this notice and forward it to the attention of the undersigned.

Yours very truly,

GRAVER TANK & MFG. CO., INC.

G. V. Malngren, Vice-President.

GRAVER

PLANTS: CATASAUQUA, PA. • EAST CHICAGO, IND. • TULSA, OKLA.
OFFICES: NEW YORK, N.Y. • CATASAUQUA, PA. • CHICAGO, ILL. • EAST CHICAGO, IND. • TULSA, OKLA.

GRAVER TANK & MFG. CO., INC.

JAN 13 1944

GENERAL STEEL PLATE CONSTRUCTION

EAST CHICAGO, INDIANA

January 11th, 1944

AIRMAIL

Selective Service System
Local Board No. 245
43-01 46th Street
Long Island City 4, New York

RE: Abraham Brothman
Order No. 52

Gentlemen:

Referring to my letter of December 20th, 1943 relative to the above registrant:

Attached hereto is the Form 42-A with the Acceptance Stamp thereon. Our amendment to our Replacement Schedule was approved by the State Headquarters of Selective Service at Indianapolis, Indiana on December 31st, 1943.

Your cooperation in connection with this case is sincerely appreciated.

Yours very truly,

GRAVER TANK & MFG. CO., INC.

G. V. McAgren, Vice-President.

GVM:J
Enc.

GRAVER

PLANTS - CATASAUQUA, PA. • EAST CHICAGO, IND. • TULSA, OKLA.
OFFICES - NEW YORK, NY • CATASAUQUA, PA. • CHICAGO, ILL. • EAST CHICAGO, IND. • TULSA, OKLA.

SELECTIVE SERVICE SYSTEM

AFFIDAVIT—OCCUPATIONAL CLASSIFICATION (Industrial)

JAN 13 1944

(Addendum—Occupational Classification (General), Form 42, is provided for use in activities where the terms on this form are not applicable)

Name of registrant Abraham Brothman

Selective Service Order No. 52

Age 30

Local Board 245
(Number)

Queens
(County)

Long Island City
(City)

New York
(State)

Title of present job Engineer and Designer

State whether journeyman, apprentice, helper, certificated, licensed, professional engineer, etc.:

Professional Engineer

Engaged as a consulting engineer and designing engineer.

Describe duties actually performed He is capable of designing all types of equipment we manufacture, which includes process equipment, resin plants, acid making equipment, food process equipment, coal handling equipment, water treating equipment, sewage disposal equipment, clarifiers, pressure tanks of all kinds, oil refinery equipment, and welded steel products. Briefly, he has been working exclusively (Be specific—include name of machine or machine tool, process, materials, etc.) on special equipment to handle the manufacture of synthetic glues for a secret military project, continuous fractional distillation of fatty acids for the production of high grade fatty acids for use in rubber compounding and metallic salts of fatty acids for use in paint and coating formulations, equipment for manufacture of pure nickel carbonate for the reduction of the carbonate to dry reduced catalyst for use in butadiene manufacture, and design of equipment for continuous operation of nickel nitrate—ultimate use the development of a nickel

Date employed June, 1942

Date entered present job catalyst to be used in the manufacture of aviation gasoline, and design of

Average weekly rate of pay, \$125.00

Average hours worked per week 44 equipment for the continuous methylation of waste fats to produce a dynamite grade of glycerine. He is capable of designing the necessary equipment and supervising the erection of and starting up the plants.

Prior work experience

Blaw-Knox, Pittsburg, Penna.

Hendrick Manufacturing Company, Carbondale, Penna.

Chemurgy Design Corporation, New York, N. Y.

Educational background John Winthrop Experimental School - Primary and part of sec-

(Fill out if necessary to establish employee's qualifications for a particular job) ondary education

DeWitt-Clinton High School - Secondary Education

Columbia College - Academic training

Columbia University - Dept. of Chemical Engr. - Professional engineering training

How long will it take you to replace this employee? More than six months

What specific steps have you taken to secure or train a replacement for this registrant?

We could materially increase our engineering force if qualified men could be found but none are available. We have tried all sources of supply, U.S. Employment Service, Engineering Societies, classified ads in trade magazines and papers.

AFFIDAVIT - OCCUPATIONAL CLASSIFICATION (Industrial) - Continued

Name of company Graver Tank & Mfg. Co., Inc.

Address of company 4309 Tod Avenue, East Chicago, Indiana

Description of the activities of this company Fabricators of welded steel structures, steel plate construction, water treating equipment, sewage equipment, softeners and filters, process equipment, clarifying equipment, fabricators of welded steel structures for machine tool builders, marine and diesel engine builders, and general plate construction, steel, stainless steel, stainless clad, and other alloys.

State specifically what proportion of your products currently produced are:

- (a) for use in the war effort 100%
- (b) for civilian use

Is expansion or further conversion contemplated in war production?

Acceptance No. 538 Effective Date October 29, 1945
If qualified personnel could be found, we could have all the work done.
 Number employees now 600 Number additional needed in next 6 months 100 Number additional needed in next year 200

Explain This affidavit for occupational classification is filed in strict accordance with accepted Replacement Schedule. This statement is made a part of this affidavit.

Is a replacement training program in operation? Contemplated?

Explain We have offered apprenticeships in our skilled shop jobs and we have always had a training program in our engineering department. The latter has had to be abandoned due to our inability to secure men eligible for such a training program. We have a training program for welders in our shop and our Student Training Course for college graduates is still in effect but men are not available.
This form was completed at the plant or office of the company located at

East Chicago, Indiana
 and all correspondence relative to this affidavit should be so addressed.

I, G. V. Malmgren, do solemnly swear (or affirm) that I am Vice-President of the above-named company, and that the foregoing statements are true to the best of my knowledge and belief.

Subscribed and sworn to before me this 11th day of January, 1944

Charles L. Miller
 (Signature of official administering oath)

Notary Public
 (Official designation of official administering oath)

INSTRUCTIONS: This form is to be filled out by an employer or other person who has knowledge of the registrant's eligibility for Class II deferment as a necessary man in his civilian occupation or activity. If the registrant is deferred, the employer must notify the Local Board promptly of any change in the registrant's job status, or if his employment is terminated.

GRAVER TANK & MFG. CO. INC.

DEC 23 1943

GENERAL STEEL PLATE CONSTRUCTION

EAST CHICAGO, INDIANA

December 20th, 1943

AIR MAIL

Selective Service System
Local Board No. 245
43-01 46th Street
Long Island City 4, New York

RE: Abraham Brothman
Order No. 52

Gentlemen:

Referring to our previous correspondence relative to the above registrant:

We filed our Replacement Schedule with the State Headquarters of Selective Service at Indianapolis, Indiana and received approval of the original schedule on October 29th, 1943, which schedule was assigned Acceptance Number 536. We have since that date filed an amendment to our schedule on which the above registrant's name appears and we are awaiting approval of the State Headquarters.

We are urgently in need of qualified engineers and we have exhausted every source of supply, including the U.S. Employment Service, without success.

We have completed and attach hereto a Form 42-A showing the information as it pertains to this man and as soon as we have the approval of the amendment to our original Replacement Schedule, we will complete and send you a new Form 42-A with the Acceptance Stamp thereon. We would sincerely appreciate your deferring any action on the reclassification of this registrant until such time as we receive the approval of the State Headquarters.

Yours very truly,

GRAVER TANK & MFG. CO., INC.

G. V. Malmgren, Vice-President.

GVM:J
Enc.

GRAVER

SELECTIVE SERVICE SYSTEM

AFFIDAVIT—OCCUPATIONAL CLASSIFICATION (Industrial)

(Affidavit—Occupational Classification (General), Form 42, is provided for use in activities where the items on this form are not applicable)

DEC 2 1943

Name of registrant Abraham Brothman43-01 4th Street
Long Island City, N.Y.Selective Service Order No. 32Age 30Local Board 245

Queens

Long Island City

New York

(Number)

(County)

(City)

(State)

Title of present job Engineer and Designer

State whether journeyman, apprentice, helper, certificated, licensed, professional engineer, etc.:

Professional EngineerEngaged as a consulting engineer and designing engineer.

Describe duties actually performed He is capable of designing all types of equipment we manufacture, which includes process equipment, resin plants, acid making equipment, food process equipment, coal handling equipment, water treating equipment, sewage disposal equipment, clarifiers, pressure tanks of all kinds, oil refinery equipment, and welded steel products. Briefly, he has been working exclusively on special equipment to handle the manufacture of synthetic glues for a secret military project, continuous fractional distillation of fatty acids for the production of high grade fatty acids for use in rubber compounding and metallic salts of fatty acids for use in paint and coating formulations, equipment for manufacture of pure nickel carbonate for the reduction of the carbonate to dry reduced catalyst for use in butadiene manufacture, and design of equipment for continuous operation of nickel nitrate—ultimate use the development of a nickel catalyst to be used in the manufacture of aviation gasoline, and design of equipment for the continuous methylation of waste fats to produce a dynamite grade of glycerine. He is capable of designing the necessary equipment and supervising the erection of and starting up the plants.

Date employed June, 1942

Average weekly rate of pay, \$ 125.00

Date entered present job average hours worked per week 44

Prior work experience

Blaw-Knox, Pittsburg, Penna.Hendrick Manufacturing Company, Carbondale, Penna.Chemurgy Design Corporation, New York, N. Y.Educational background John Winthrop Experimental School - Primary and part of secondary education
(Fill out if necessary to establish employee's qualifications for a particular job)DeWitt-Clinton High School - Secondary educationColumbia College - Academic trainingColumbia University - Dept. of Chemical Engr. - Professional engineering training.How long will it take you to replace this employee? More than six months

What specific steps have you taken to secure or train a replacement for this registrant?

We could materially increase our engineering force if qualified men could be found but none are available. We have tried all sources of supply, U.S. Employment Service, Engineering Societies, classified ads in trade magazines and papers.

AFFIDAVIT—OCCUPATIONAL CLASSIFICATION (Industrial)—Continued

Name of company Graver Tank & Mfg. Co., Inc.

(Corporation, partnership, individual—if self-employed, be specific)

Address of company 4809 Tod Avenue, East Chicago, Indiana

(Location of plant, office, or division where registrant is employed)

Description of the activities of this company Fabricators of welded steel structures, steel plate construction, water treating equipment, sewage equipment, softeners and filters, process equipment, clarifying equipment, fabricators of welded steel structures for machine tool builders, marine and diesel engine builders, and general plate construction, steel, stainless steel, stainless clad, and other alloys.

State specifically what proportion of your products currently produced are:

(a) for use in the war effort 100%

(b) for civilian use

Is expansion or further conversion contemplated in war production?

If qualified personnel could be found, we would materially increase our force.

Number employees

now 600

Number additional

needed in next 6 months 100

Number additional

needed in next year 200

Explain

Is a replacement training program in operation?

Contemplated?

Explain We have offered apprenticeships in our skilled shop jobs and we have always had a training program in our engineering department. The latter has had to be abandoned due to our inability to secure men eligible for such a training program. We have a training program for welders in our shop and our Student Training Course for college graduates is still in effect but men are not available. This form was completed at the plant or office of the company located at

East Chicago, Indiana

and all correspondence relative to this affidavit should be so addressed.

I, G. V. Malmgren

, do solemnly swear (or affirm)

that I am Vice-President

(Official position)

of the above-named company, and that the

foregoing statements are true to the best of my knowledge and belief.

Subscribed and sworn to before me this

18

day of

December

1943

(Signature)

(Signature of official administering oath)

Notary Public

(Official designation of official administering oath)

INSTRUCTIONS: This form is to be filled out by an employer or other person who has knowledge of the registrant's eligibility for Class II deferment as a necessary man in his civilian occupation or activity. If the registrant is deferred, the employer must notify the Local Board promptly of any change in the registrant's job status, or if his employment is terminated.

HERBERT R. SIMONDS
CONSULTING ENGINEER
551 FIFTH AVENUE
NEW YORK 17, N. Y.

December 16, 1943

Chairman of Board
Local Board 245, Queens County
4301 - 46th Street
Long Island City, N. Y.

Dear Sir: Re: Order #52

Inasmuch as Mr. A. Brothman was the personal designer of a phenol formaldehyde pilot plant which the Chinese Government is to build to help them in the manufacture of airplanes for the war effort, I am hoping he will be available at the time the equipment arrives, to help with the installation and plant operation.

This work is being done with the knowledge of the Lend Lease authorities at Washington and I believe carries a critical priority rating. The plan is to have Chinese technical people learn how to operate the plant and then ship the whole plant and personnel to China for the manufacture there of the glues needed in plywood aircraft production.

Mr. Brothman's particular experience and ability is very much needed in this whole project and the division of the Chinese Government which I represent is looking to him for assistance.

Very truly yours,

Herbert R. Simonds

HRS:RW

DEC 16 1943 245

43-01 45th Street

Long Island City, New York (New York City)

REPORT OF PHYSICAL EXAMINATION AND INDUCTION

First examination ☒ Second examination ☐ Third examination ☐ Fourth examination ☐
(To be filled in by local board clerk. Check number of examination made by local board)

Section I.—GENERAL (To be filled in by the local board clerk from the Selective Service Questionnaire, D. S. Form 40. Write "none" opposite the questions where no information is given. Do not leave any question blank.)

1. Name (page 1) Abraham Brothman
(First) (Last)

2. Address (page 1) 41-08 42nd Street, Long Island City, Queens, New York.
(Street or rural route) (Town or city) (County) (State)

3. Social Security No. (Series I, line 5) lost card 4. Registrant's order number (page 1) 52

5. Physical or mental defects or diseases (Series II, line 1) No

6. Treatment at an institution, sanitarium, or asylum (Series II, line 2) No
(Number years completed) (Series III): Elementary school 8 High school 4 Vocational school, college, or university 5

7. Education (Series III):
8. Occupation: (a) Title of present job (Series IV, line 2 (a), or Series V, line 1) Chief Engineer and Vice President

(b) Duties (Series IV, line 2 (b)) Chemical Engineer

(c) Title of last job, if unemployed (Series IV, line 3)

9. Years experience in this work (Series IV, line 3 (c), or Series V, line 2) 2

10. Income (Series IV, line 2 (d)): Average Weekly earnings \$ 170.00
(Weekly, monthly, annual)

11. Employment class (Series IV, line 2 (e)): Permanent employee ☒ Temporary employee ☐ Apprentice ☐ Independent worker ☐
Unpaid family worker ☐ Employer ☐ Student (Series IV, line 4 (a)) ☐

12. Business of present employer (Series IV, line 2 (f)) Engineering

13. Marital status (Series VII, line 1): Single ☐ Widower ☐ Divorced ☐ Married, not separated ☒ Married, separated ☐

14. Number of dependents (Series VII, line 3 (a) fifth column except N. C.'s plus line 4 (a) fifth column) 3

15. Birthplace (Series IX, line 1) New York City, New York, U.S.A.
(Town or city) (State) (Country)

16. Birth date (Series IX, line 2) August 15, 1913
(Month) (Day) (Year)

17. Race (Series IX, line 3): White ☒ Negro ☐ Other (specify) _____

18. Citizenship: United States citizen (Series IX, line 4) Yes; Declarant alien (Series IX, line 7) _____
(Yes or no) (Yes or no)

19. Previous U. S. military service (Series XII): None ☒ Army ☐ National Guard ☐ Navy ☐ Marine Corps ☐ Coast Guard ☐

20. Type of discharge (Series XII): Specify _____

21. Date of registrant's affidavit (top of page 5) 15th November 1940
(Day) (Month) (Year)

INSTRUCTIONS

1. An original and three copies of this form will be prepared for each registrant called up for physical examination. The original is designated as the Armed Forces' Original; the first carbon copy, the National Headquarters' Copy; the second carbon copy, the Surgeon General's (Army)—Bureau of Medicine and Surgery (Navy)—Commandant Marine Corps (M. C.) Copy; and the third carbon copy, the Local Board's Copy. Instructions are contained on each copy.

2. Forms of men rejected by the armed forces will be marked "Rejected by the Armed Forces" in large letters at the top of page 1. If the registrant is not sent to the induction station of the armed forces, or is rejected by the induction station of the armed forces, this original will be filed, along with "Local Board's Copy" (3d copy), in the registrant's Cover Sheet (Form 53).

3. For registrants accepted by the induction station of the armed forces: If inducted by the Army, this original accompanied by F. B. I. Military Fingerprint Card will be forwarded from induction station to The Adjutant General, Washington, D. C.; if inducted by the Navy or Coast Guard, this original will be forwarded through the Main Recruiting Station to the Bureau of Navigation, Washington, D. C.; if inducted by the Marine Corps, this original will be sent to the Commandant, Headquarters, U. S. Marine Corps, Washington, D. C.

4. Fingerprints are required only on this original and only for registrants who are inducted. If inducted by Army, prepare F. B. I. Military Fingerprint Card.

ORIGINAL COPY

SECTION II.—REPORT OF LOCAL BOARD EXAMINING PHYSICIAN AND LOCAL BOARD CLASSIFICATION

21. If registrant's answer to Item 6 above is "yes," when and for what ailment?

22. Is registrant now or previously an enrollee in the Civilian Conservation Corps: No ☐ Yes ☐

24. Serological test (syphilis): Date _____ Result _____

Second serological test (syphilis): Date _____ Result _____

25. Examining physician's remarks _____

26. (a) Do you find that the above-named registrant has any of the defects set forth in Part I of the List of Defects (Form 220)?
(If in doubt, answer "no," and give details.) _____ If answer is "yes," describe the defects, in order of significance.
(Answer yes or no)

(b) Do you find that the above-named registrant has any of the defects set forth in Part II of the List of Defects (Form 220)?
(If in doubt, answer "no," and give details.) _____ If answer is "yes," describe the defects, in order of significance.
(Answer yes or no)

(c) I have examined the above-named registrant in accordance with Selective Service Regulations.

(d) Signature of examining physician _____

(e) Place _____
(Town or city) (County) (State)

DEC 16 1943

(f) Date _____

27. (a) This Local Board has classified the above-named registrant in Class _____

(b) Signature of Member of Local Board _____

(c) Place _____
(Town or city) (County) (State)

(d) Date DEC 20 43

SECTION III.—NEAREST RELATIVE, PERSON TO BE NOTIFIED IN CASE OF EMERGENCY, AND DESIGNATION OF BENEFICIARY (To be filled out at the induction station of the armed forces for only those registrants accepted for military service.)

A. Nearest relative and person to be notified in case of emergency:

28. Nearest relative _____

(Other than wife or minor child. Name in full)

29. Relationship _____ 30. Address _____

(Number and street or rural route; if none, so state) (City, town, or post office) (State or country)

31. Person to be notified in case of emergency _____

(Name in full)

32. Relationship _____ 33. Address _____

(If friend, so state)

(Number and street or rural route; if none, so state) (City, town, or post office) (State or country)

B. Designation of beneficiary:

34. The persons eligible to be my beneficiary are designated below:

(1) _____

(Full name of wife; if no wife, or if she is deceased or divorced, so state)

(With full address)

(2) _____

(Full name and address of each minor child and each dependent child over 21 years of age. If there are no children, so state. If the address is the same as the

wife's, so state. Do not repeat address)

35. In the event of my leaving no widow or child, or their decease before payment is made, I then designate as my beneficiary the dependent relative whose name, relationship, and address are shown below:

(3) _____

(If designation of beneficiary is declined, man must state in own handwriting: "I decline to designate any person as my beneficiary")

36. In the event of the death or disqualification of the last-named dependent relative before payment is made, I then designate as my beneficiary the dependent relative whose name, relationship, and address are shown below:

(4) _____

(If beneficiary is named in line 35 but naming of alternate is declined, man must state in own handwriting: "I decline to designate an alternate beneficiary")

37. Signature of registrant _____

(First name)

(Middle name)

(Last name)

38. Witnessed at _____

on _____

19____

(Signature of witness attesting)

(Name of witness typed)

(Grade and organization)

ORIGINAL COPY

(PAGE 2)

410-20041-2

Section IV.—PHYSICAL EXAMINATION RESULTS: (All Items Must Be Filled In. Indicate Normal or None Where Applicable. To Be Filled Out by the Medical Board at the Induction Station of the Armed Forces.)

39. Eye abnormalities

40. Ear, nose, throat abnormalities

41. Mouth and gum abnormalities

42. Teeth (a) Indicate restorable carious teeth by circling; nonrestorable carious teeth by /; missing natural teeth by X.

Right										Left									
1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20	11	12	13	14	15	16	17	18	19	20

(b) Remarks, including other defects

(c) Prosthetic dental appliances

(d) Remediable dental defects

43. Skin

44. Varicose veins

45. Hernia

46. Hemorrhoids

47. Genito-urinary (non-venereal)

48. Venereal diseases

49. Feet

50. Musculoskeletal defects

51. Abdominal viscera

52. Cardiovascular system

53. Lungs

54. Chest X-ray

55. Mental

56. Nervous system

57. Endocrine system

58. Other defects and/or diseases or other remarks

59. Summary of defects in order of significance

ORIGINAL COPY

(PAGE 2)

60. Vision, without correction:

(a) Right eye

(b) Left eye

61. Vision, with correction:

(a) Right eye

(b) Left eye

62. Color perception*

63. Hearing:

(a) Right ear

(b) Left ear

64. Height _____ inches.

65. Weight _____ pounds.

66. (a) Girth, at nipples; inspiration _____ inches.

(b) Girth, at nipples; expiration _____ inches.

(c) Girth, at umbilicus _____ inches.

67. Posture:

Good ☐ Fair ☐ Poor ☐

68. Frame:

Heavy ☐ Med. ☐ Light ☐

69. Color of hair

70. Color of eyes

71. Complexion

72. Pulse, sitting

73. Pulse, after exercise*

74. Pulse, 2 minutes after exercise*

75. Blood pressure:

(a) Systolic

(b) Diastolic

76. Urinalysis:

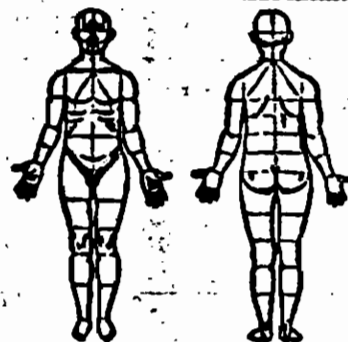
(a) Specific gravity

(b) Albumin

(c) Sugar

(d) Microscopic*

77. Other data:



* When indicated.

440-20041-2

Section IV.—PHYSICAL EXAMINATION RESULTS—Continued.

78. I certify that the above-named registrant was carefully examined, that the results of the examination have been correctly recorded on this form and that to the best of my knowledge and belief—

- (a) _____ is physically and mentally qualified for general military service.
(Enter name of registrant if this subsection is applicable)
- (b) _____ is physically and mentally qualified for general military service after the satisfactory correction of the following remediable defects: _____
(Enter name of registrant if this subsection is applicable)

This registrant would have been accepted for general military service had the remediable defects herein specified been remedied at the time of this examination.

- (c) _____ is physically qualified for limited military service only by reason of _____
(Enter name of registrant if this subsection is applicable)

- (d) _____ is physically qualified for limited military service after the satisfactory correction of the following remediable defects: _____
(Enter name of registrant if this subsection is applicable)

This registrant would have been acceptable for limited military service had the remediable defects herein specified been remedied at the time of this examination.

- (e) _____ is physically and/or mentally disqualified for military service by reason of _____
(Enter name of registrant if this subsection is applicable)
- (f) _____ is disqualified for military service because of _____
(Enter name of registrant if this subsection is applicable)

(g) Signature _____ (h) Title _____
Medical Examiner.

(i) Name typed or stamped _____

79. (a) _____ was this date inducted for (general; limited) [strike out inapplicable word] military service into the (fill in appropriate Service, such as Army, Navy, Marine Corps, or Coast Guard) _____ of the United States and sent to _____

(b) _____ was this date rejected for service in the (fill in appropriate service, such as Army, Navy, Marine Corps, or Coast Guard) _____ of the United States

(c) Place _____ (d) Signature _____

(e) Date _____ (f) Name typed or stamped _____
(Grade and organization)

SECTION V.—LOCAL BOARD CHANGE IN CLASSIFICATION AFTER EXAMINATION BY THE INDUCTION STATION OF THE ARMED FORCES.

80. (a) Based on the entries in (a), (c), (d), (e), or (f) of Item 78, above, the Local Board has changed the above-named registrant's classification to Class _____

(b) Based on the entries in (b) of Item 78, above, the Local Board has retained the above-named registrant in Class _____

(c) Place _____ (d) Date _____

(e) Signature of member of local board _____

FINGERPRINTS—RIGHT HAND

1. THUMB	2. INDEX	3. MIDDLE	4. RING	5. PINKY

ORIGINAL COPY

(Page 4)

DEC 12 1943

THE CHEMURGY DESIGN CORPORATION

A DIVISION OF SOLWAYNE CHEMICALS CORPORATION

43-01 46th Street
Long Island City, N. Y.

ENGINEERS & FABRICATORS OF
PROCESSING PLANTS
PROCESS EQUIPMENT

120 LEXINGTON AVENUE
NEW YORK CITY
PHONE LEXINGTON 2-0200

December 10, 1943

Local Board No. 245, Queens County
43-01 46th Street
Long Island City, New York

Dear Sirs:

In re the occupational deferment from Selective Service of our Mr. Abraham Brothman, we submit herewith on his behalf the following for your consideration.

Mr. Brothman is presently Chief Engineer and Vice-President of the Chemurgy Design Corporation. As such he assumes a vital role in the various tasks and projects confronting our organization. The Corporation is presently engaged in 100% war work. The Chemurgy Design Corporation acts as consulting engineers to:

1. International Engineering, Inc. of Dayton, Ohio who manufacture Process Equipment for the Chemical, Petroleum, Synthetic Rubber, Plastics, Explosives, and Allied Industries. In addition to the aforementioned International manufactures Blowers, Fans, Mine Cars, and Mills. They are presently under 100% production for the War Effort. Please refer to the attached letter from International Engineering which reviews Mr. Brothman's connection with this company.
2. Graver Tank & Mfg. Co. of East Chicago, Indiana and Cattasqua, Pennsylvania who are one of the largest steel plate fabricators in the United States. Graver manufactures water-treating systems for Industrial Power Plants. Graver is presently furnishing equipment for the processing of Aviation Gasoline, Butadiene, Synthetic Rubber, Petroleum Refining, and Industrial Alcohol Fermentation and Distillation under the highest of priorities for government-sponsored and government-financed projects. Please see Graver's letter attached.

3. The Rufert Chemical Div. of the Seymour Mfg. Co. of Seymour, Connecticut who are the largest producers of Nickel Catalyst in the United States. The Catalyst produced is used for the Hydrogenation of Aviation Gasoline, Butadiene, Oil, and various war essential Chemicals. Please refer to the attached letter from the Rufert Chemical Co. which reviews Mr. Brothman's affiliation with their present construction program.
4. The Pulverized Metals Corporation of Centerbrook, Connecticut who produce powdered magnesium metal for the loading of Incendiary Bombs, Tracer Shells, Tracer Bullets, Pyrotechnics. All of this company's production is detailed to the Australian Government under a contractual arrangement with the British Purchasing Commission. Please see the attached letter from Pulverized Metals Corp. concerning Mr. Brothman's connection with their production and design problems.

The Chemurgy Design Corporation, exclusive of the work engaged in for or by its clients as mentioned above, is directly engaged in the following projects.

1. the designing, engineering, and erection of a Plant for the manufacture of Synthetic Resins to be used in the airplane industry. This Plant is to be shipped to China thru Lend-Lease by our client, the Commission on Aeronautical Affairs for the Republic of China. Recently this work has been extended to include the framing of a prospectus to be carried out by Chemurgy of a complete chemical industry for China that would be capable of starting with raw materials presently available in China and carry through to a complete plastics industry, again thru lend-lease.
2. the designing, engineering, and erection of a Plant for the production of Aerosol Insecticide Bombs by the Regal Chemical Corporation, Brooklyn, New York. The Bombs will be produced at the rate of 300,000 per month for use by the U.S. Navy exclusively — U.S. Navy Contract No. NASX - 33294. Please refer to a letter from the abovenamed company on Mr. Brothman's behalf.
3. the development, engineering, and design of the Brothman-Feber Continuous System for the production of Buna Synthetic Rubbers which is currently being employed by all of the Defense Corporation Plants. Attached please find a reprint of "Batch Continuous Process for Buna-S" which appeared in Chemical and Metallurgical Engineering and which outlines the mentioned work. The work done in the Synthetic Rubber Program has recently been extended to include the entire chemical industry as is shown in another

December 17, 1943

1943

43-01 4th Street
Long Island City, N. Y.

enclosed reprint "New Approach to Continuous Reactor Design". In this connection, may the writer point out that Continuous as opposed to batch chemical production, as rationalized for the first time in the enclosed reprint, is high on the list of "musts" in the War Effort. Mr. Brothman has further been invited to deliver a paper before the American Chemical Society in December that will deal with an extension of remarks to the abovementioned work.

4. the research, development, designing, engineering, construction, and initial operation of a Plant for the recovery of Nickel, Fats, and Oils as well as for the manufacture of Dynamite Grade Glycerine, Nickel Catalyst, and Free Fatty Acids for the Rufert Chemical Division of the Seymour Mfg. Co., Seymour, Connecticut.
5. the research, and development of equipment for the conversion of present batch operation chemical plants to continuous operation. The Government, which is vitally interested in the results, has granted to the corporation laboratory a blanket AA-2X priority rating so that it may bring its work to a rapid conclusion.

I am sure that you will bear with us, from the enclosed evidence which we are placing at your disposal, that the replacement of a man of Mr. Brothman's calibre is, under the present conditions of a shortage of technical personnel, virtually an impossibility. In view of this situation, we solicit your very careful consideration of our application for Mr. Brothman's deferment.

Yours very truly,

THE CHEMURGY DESIGN CORPORATION



A.P. Weber
Secretary-Treasurer

APV:lh
encls.

SELECTIVE SERVICE SYSTEM

AFFIDAVIT—OCCUPATIONAL CLASSIFICATION (Industrial)

BUDGET BUREAU No. 42-3000-23
Local Board No. 245
Approved: 11/11/43
081

(Affidavit—Occupational Classification (General), Form 42, is provided for use in activities where the items on this form are not applicable)

REC 11.1943 245

Name of registrant Abraham Brothman 4301 46th Street
Long Island City, N.Y.

Selective Service Order No. 52 Age 30

Local Board 245 Queens New York City New York
(Number) (County) (City) (State)

Title of present job Chief Engineer & Vice-President

State whether journeyman, apprentice, helper, certificated, licensed, professional engineer, etc.:

Chemical Engineer

Describe duties actually performed

(Be specific—include name of machine or machine tool, process, materials, etc.)

(Please see attached letter)

Date employed June, 1942 Date entered present job June, 1942

Average weekly rate of pay, \$ \$170.00 Average hours worked per week 70

Prior work experience Chief Engineer, Hendrick Mfg. Co., Carbondale, Pa.

Chief Engineer, Blaw-Knox Co., Pittsburgh, Pa.

Educational background Chemical Engineer's degree
(Fill out if necessary to establish employee's qualifications for a particular job)

Columbia University
New York City

How long will it take you to replace this employee? In view of Mr. Brothman's duties and abilities and in view of the manpower situation we cannot make a definite commitment in this regard. (See attached)

What specific steps have you taken to secure or train a replacement for this registrant?

(Please see attached letter)

AFFIDAVIT OCCUPATIONAL CLASSIFICATION (Industrial) —Continued

Name of company The Chemurgy Design Corporation
(Corporation, partnership, individual — if self-employed, so state)
 Address of company 420 Lexington Avenue, New York 17, N.Y.
(Location of plant, office, or division where registrant is employed)
 Description of the activities of this company _____

Local Board No. 345
 Queens County NY

DEC 11 1943

(Please see attached letter)

4301 18th Street
 Long Island City, N. Y.

State specifically what proportion of your products currently produced are:

- (a) for use in the war effort 100%
 (b) for civilian use _____

Is expansion or further conversion contemplated in war production? Yes, we expect to be involved in a very large lend-lease engineering contract within the next few months which is

Number employees now 11 Number additional needed in next 6 months 12 Number additional virtually assured needed in next year 1

Explain Assuming that we maintain our present volume of business, and that we are involved the contract mentioned above, about 12 more engineers and draftsmen will be needed for our organization.

Is a replacement training program in operation? Yes Contemplated? _____

Explain We use women draftsmen and laboratory technicians wherever possible in order to relieve the manpower shortage.

This form was completed at the plant or office of the company located at

420 Lexington Avenue, New York, 17, New York
 and all correspondence relative to this affidavit should be so addressed.

I, Arthur P. Weber, do solemnly swear (or affirm)

that I am Secretary-Treasurer of the above-named company, and that the foregoing statements are true to the best of my knowledge and belief.

Subscribed and sworn to before me this 10th day of December, 1943

Arthur P. Weber
(Signature)

Margaret H. [Signature]
 NOTARY PUBLIC, Queens County
 (Signature of official administering oath)
 My Co. Exp. [Signature]
 Commission Expires March 31, 1944
(Official designation of official administering oath)

INSTRUCTIONS: This form is to be filled out by an employer or other person who has knowledge of the registrant's eligibility for Class II deferment as a necessary man in his civilian occupation or activity. If the registrant is deferred, the employer must notify the Local Board promptly of any change in the registrant's job status, or if his employment is terminated.

1-11-60 No. 243
Queens County
1943
INC.
Queens County

December 9, 1945

Dear Sirs:

Mr. Brothman is one of the finest chemical design engineers in the United States and as we are running 100% defense, it would be a terrific blow to us to lose Mr. Brothman's services. In fact, we have no hesitancy in saying that in our opinion Mr. Brothman, as he is, is doing much more important work for our war effort than if he were in active service.

INTERNATIONAL ENGINEERING, INC.

R.H. McElroy, President

GRAVER TANK & MFG. CO., INC.

43-01 46th Street
Long Island City, N. Y.

DESIGNERS, FABRICATORS AND ERECTORS
STEEL TANKS, GENERAL STEEL PLATE CONSTRUCTION
WATER TREATING EQUIPMENT
CLARIFIERS

EAST CHICAGO, INDIANA, U. S. A.

EAST CHICAGO, IND.
CHICAGO, ILL.
NEW YORK, N. Y.
CATASAUGUA, PA.

December 9, 1943.

Selective Service System,

Local Board No. 245,

Queens County,

43-01 46th Street,

Long Island City, N. Y.

Re: A. Brothman.

Gentlemen:

Referring to the above registrant and his status under the Selective Service System:

Mr. Brothman is a Consulting Engineer and in such capacity is engaged in designing of equipment we manufacture. He makes decisions as to the design, quality, and kind of material to be used in the equipment and assumes responsibility for the operability of the completed units.

We are engaged in the designing, fabrication, and erection of process equipment, water treating equipment, softeners and filters, sewage equipment, clarifying equipment, welded steel structures, and general construction of steel plate, stainless steel, stainless clad, or other alloys. We are engaged in 100% war production work, our contracts being with the Navy Department, War Department, U. S. Maritime Commission, and under the Lend-Lease Program. We are manufacturers of process and other equipment for leading oil companies, synthetic rubber plants, and other essential industries so necessary in the successful prosecution of the War Effort.

At present the above registrant is working on the design, engineering, erection, and initial operation of a resinous plant for the Chinese Government, Chinese Commission on Aeronautical Affairs.

We would sincerely appreciate your favorable consideration of deferred classification of this "essential" man.

Yours very truly,
GRAVER TANK & MFG. CO., INC.

Subscribed and sworn to
before me this 9th day of
December, 1943.

Q. V. Malingren, Vice-President.

A Graver Product Means Quality

RUFERT CHEMICAL COMPANY

CATALYST MANUFACTURERS



43-01 46th Street
Long Island City, N.Y.

SEYMOUR BRIGHT NICKEL PROCESS

SEYMOUR, IDEN

December 9, 1943

CABLE ADDRESS "WYBROOK" NEW YORK

Local Board No. 245
43-01 46th Street
Long Island City, New York

Gentlemen:

Please allow us to submit the following as a supplement to Mr. A. Brothman's application for occupational deferment:

As a member of the Chemurgy Design Corporation, Mr. A. Brothman has, for the past eleven months, been charged with the process chemical engineering, mechanical designing, and supervision during erection of a Nickel Recovery Plant, which we are building at the Government's request.

This plant will be capable of recovering from spent hydrogenation catalyst, approximately 1,500,000 lbs. of Nickel a year, and 7,500,000 lbs. a year of oil, fats, fatty acids, and dynamite grade glycerine.

Mr. Brothman has also been charged with an extension of our present plant facilities to include the manufacture of Nickel Catalyst and Nickel Salts to be used by the Petroleum companies in pursuance of their war contracts for the manufacture of butadiene or synthetic rubber and the manufacture of aviation high octane gasoline.

The quantities of critical materials which will be recovered and the highly critical nature of Nickel, oils, fats, dynamite grade glycerine, fatty acids, and catalyst in the war effort, prompts us to direct this plea to you at this time.

Mr. Brothman is responsible for the supervision and trial operation of the complete project when finished, and it is essential and imperative that he continues in his present capacity.

We trust that the above may have your valuable consideration.

Very truly yours,

THE RUFERT CHEMICAL COMPANY

Meyur Freed
Technical Director



420 LEXINGTON AVENUE, NEW YORK 17, N. Y.
CABLE ADDRESS: WYNOOL

Board No. 245
Queens County

43-01 46th Street
Long Island City, N. Y.

December 9, 1943

Selective Service Board No. 245
Queens County
43-01 46th Street
Long Island City, New York

Gentlemen:

Mr. A. Brothman, Order No. 52, has, since July 1942, served as consulting engineer to our associated company, The Pulverized Metals Corporation of Centerbrook, Connecticut. As such, he is now responsible for all engineering connected with the continued operation of our plant facilities as well as for the design of new facilities connected with the project.

His work in improving and expanding the production of pulverized magnesium powder by our plant, has been of the highest order and to our complete satisfaction.

In view of the place occupied by magnesium powder in the War Effort and in view of our difficulties in recruiting competent technical aid for the advancement of our production and expansion problems it is our conviction that Mr. Brothman's services are vital to us.

Pulverized Magnesium powder, as produced by us for the Australian Government under Lend-Lease, goes entirely for the production of Incendiary Bombs, Tracer Bullets, Tracer Shells, and Pyrotechnics to be used in the South Pacific theatre of war operations.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "Henry A. Golwynne", written over a horizontal line.

Henry A. Golwynne, President
Golwynne Chemicals Corporation

G-p

REGAL CHEMICAL CORPORATION

115-117 DOBBIN STREET • BROOKLYN 22, NEW YORK

Telephone: EYerpress 9-5702

December 10, 1945

Selective Service Board No. 245
45-01 48th Street
Long Island City, New York

Re: Mr. Abraham Brothman
Order No. 32

Gentlemen:

We are engaged 100% in secret war work for the armed forces, on an item to combat malaria. Since August 1943, Mr. Abraham Brothman has been engaged by us in the study, engineering, and the final construction of a plant that will do the required work, as we recognize that he is a specialist in the technical details and engineering of the project involved.

At the present time we have a contract with the United States Navy in an emergency program, and since Mr. Brothman is responsible for the construction of same, we consider his services indispensable to the fulfillment of our obligations to the Navy.

Very truly yours,

Regal Chemical Corporation

Theodore Heilig
Theodore Heilig
President

TH:aw

New Approach to Continuous Reactor Design

A. Brothman, A. P. Weber and E. Z. Barish

Engineers, Chemistry Design Corp., New York
International Engineering, Inc., Dayton, Ohio

Reprinted from
Chemical & Metallurgical Engineering
July, August, September
1943

New Approach to Continuous Reactor Design—I

A. BROTHMAN, A. P. WEBER and E. Z. BARISH

Chem. & Met. INTERPRETATION

This is the first of three articles dealing with a new theoretical approach to the problem of design of continuous processing equipment for carrying out liquid-phase reactions and other combining and mixing operations. By use of the methods developed by the authors it has been found in practice that a close approximation of the actual performance of the equipment can be predetermined, enabling the designer to calculate the number, capacity and arrangement of the vessels required for a given throughput and degree of completion of the reaction. The mathematical derivation of the expressions used is complex and is presented here only in summary. Use of the derived expressions, however, is not difficult and offers a quicker and more accurate path to continuous reactor design than previously available.

The first article presents the basic derivation of the expression showing how long an average particle of material will remain in a given sequence of continuous processing vessels. The second article couples this expression with the characteristic combining-velocity equations for various sorts of combining phenomena, and also presents useful circulation capacity data on various mixer types. The third gives a detailed practical demonstration of the use of the new methods in the solution of an actual design problem. It should be noted that the present articles apply specifically to liquid-phase combining phenomena. However, the authors have recently found it possible to extend the mathematics also to vapor- and gas-phase reaction systems where bypass effects are employed.—Edman

ONE of the prime objectives of production men and plant designers has always been to put all plant operations on a rationalized "assembly-line" basis—to put each unit operation in a manufacturing sequence on a basis such that the operation will provide a uniform, steady, and continuous feed for its sequel. Especially today, with the United States on a war footing and production one of the most vital elements in bringing this war to a quick and victorious end, rationalized production is high on the list of "musts." When the chemical and process industries can employ "assembly-line" production they are able to feed raw materials continuously in one end of a plant, maintain continuous flow through all of the unit operations involved and, finally, discharge continuously for dis-

position at the other end of the plant. Advantages for such operation include:

1. The elimination of all "dead-time" in charging and discharging batch types of equipment and in bringing an accumulated mass of material to appropriate processing levels of temperature and pressure, etc., thereby increasing the productive time of the plant.
2. A reduced requirement for highly trained personnel from the already-strained manpower reservoir.
3. Greater uniformity of products through the elimination of the human element in control.
4. A pronounced decrease in the cost of production.
5. In most cases, a greater productivity per unit volume of tankage per unit of time.

It is the purpose of this series of

articles to present a rational method for designing continuous equipment for handling those combining phenomena (reactions, dissolving, blending, emulsifying, etc.) in which a liquid phase enters as the principal source of the combining phenomena and which are characterized at times by comparatively low combining velocities. This development, the authors believe, fills in one of the last remaining links in making "assembly-line" production possible for the process and chemical industries. The notable success which has typified the use of continuous calciners, kilns, attrition and grinding mills, vapor phase reactors, stills, filters, centrifuges, dryers, crystallizers, etc., as well as the continuous equipment for handling other chemical engineering unit operations will in our belief spur the utilization of the following material.

In Fig. 1, what the authors consider to be a continuous mixing vessel of high efficiency is illustrated. However, the construction shown should not be regarded as a specific recommendation in any respect, since a large number of other specific arrangements for the indicated "elements" can be usefully employed to satisfy the general operational characteristics of the device shown. In fact, other specific arrangements embodying the principles of operation shown in Fig. 1 may be more advantageously suited to certain particular instances.

Let us proceed to break down the structure shown in Fig. 2 into its elements, and investigate each of the elements with respect to the direct function or functions it serves:

1. The direct functions served by the draft tube are: (a) to "channelize" the path of the incoming stream, so that the new feed is subjected to the very intensive mixing action which exists in the immediate neighborhood of the "homogenizing" mixers; and (b) to restrict to some approximate predictable limit the smallest length of time which a particle can spend in the mixing unit by defining the average course which the particle will travel from inlet to outlet nozzle.

2. The direct function served by the recirculation ports in the draft tube is

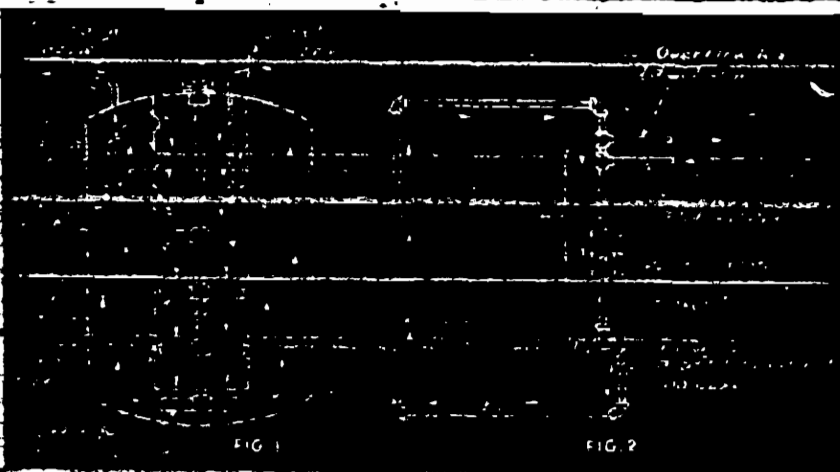
to permit a recycling of a portion of the material which was previously exhausted from the draft tube, back into the draft tube and down through the "homogenizing" and exhausting mixer elements.

3. The direct functions served by the "homogenizing" mixers are: (a) to provide optimum conditions of agitation under which the reacting or combining action proceeds; and (b) to provide for the fullest possible blending of the incoming stream with the previously fed materials that are being recirculated through the ports in the draft tube.

4. The direct functions served by the draft tube exhausting mixer are: (a) to cause a constant "turnover" of materials in the mixing vessel by continuously exhausting the contents of the draft tube; and (b) to aid and augment the effects of the "homogenizing" mixers in certain sizes of mixing assemblies. (In such cases the draft tube exhausting mixer element may perform both the functions of providing the draft tube exhausting action and the "homogenizing" mixers' effects.) It may also be pointed out here that in most instances, propeller or turbine type mixers would be used to discharge the pumping function of the draft tube exhausting mixer. Although paddles (of either the "pitched" or normal blade types) could, if assigned the proper speed, perform the required task, turbines and propellers, if properly designed, and assigned proper operational characteristics, would perform with greater efficiency than paddle type mixers.

5. The direct functions served by the mixing vessel and the inlet and outlet nozzles are, of course, obvious.

A cursory examination of the mode of operation of the equipment shown in Fig. 1 reveals that, for the condition of continuous feed and continuous discharge, there does not exist any means whereby a uniform retention within the equipment for all portions of the feed is assured. In other words the effluent from the equipment would be made up of portions which had stayed for various periods of time in the system. Yet, it is known that the completion of combining phenomena does vary as some function of the time spent in the system. Since such is the case, the problem must be approached



as described below if we are to be able to predict the efficiency of a given continuous mixer.

The problem resolves itself into two main tasks; (a) to obtain some quantitative picture of the effluent from the equipment in terms of the retention times in the system of each discrete portion of the effluent; and (b) this quantitative picture of the effluent must be combined with the completion velocity characteristics of the particular combining phenomenon involved, in order to obtain the mean completion typifying the effluent. The present article is concerned with task (a), the second with task (b).

Expressed mathematically, it will be our goal to be able to compute the mean level of completion of a given combining phenomenon in the effluent from a continuous mixer after the manner set forth below:

$$\bar{S} = \frac{P_1 f_1 + P_2 f_2 + \dots + P_n f_n}{P_1 + P_2 + \dots + P_n} \quad (1)$$

where \bar{S} = the mean completion of the combining phenomenon; $P_1, P_2, P_3, \dots, P_n$ = the proportions of the discharge respectively corresponding to retention times equal to $t_1, t_2, t_3, \dots, t_n$; and $f(t_1), f(t_2), f(t_3), \dots, f(t_n)$ = the extents of completion of the combining phenomenon at hand, in terms of functions of $t_1, t_2, t_3, \dots, t_n$. To facilitate the discussion of the entire problem, we shall hereafter refer to the quantitative analysis of the effluent—the $P_1, P_2, P_3, \dots, P_n$ of Equation (1)—as the "time-proportion" composition of the effluent.

Fig. 1—The schematic representation of the mixing vessel of Fig. 1.

Before we proceed with the detailed investigation of the problem, it should be noted that various reasons may from time to time compel the use of several identical units in series. These reasons may include such factors as the physical limitations on vessel size imposed by a certain factory building, the heat transfer surface requirements of the combining phenomenon involved, or certain reaction-mechanics peculiarities which are discussed in the third article. It is therefore apparent that the method used for ascertaining the "time-proportion" composition of the effluent for units of the type shown in Fig. 1 must be sufficiently flexible to deal with cases where either a single unit or several vessels in series, as in Fig. 2, will comprise the continuous combining system.

For any given rate of throughput and any stated number of vessels comprising the system, it will be seen from the development in this treatise that the "time-proportion" composition of the effluent can be obtained using an easily computed characteristic of the device shown in Fig. 1, namely, the rate of turnover (or circulation) effected by the draft tube exhausting device. The mean completion of any combining phenomenon, it will be shown in the second article of this series, may be arrived at by using the "time-proportion" composition of the effluent (as determined in terms of the rate of turnover, desired rate of throughput, and the number and arrangement of the vessels used) in combination with the time vs. completion curve for the particular combining operation in question. The last factor, it should be noted, is influenced by the condition of work-input exerted on the materials in process by the "homogenizing" and the draft tube exhausting mixers shown in Fig. 1, as well as by the volume of the mixing vessel.

Table 1—Proportions Leaving and Remaining in a One-Vessel System After Various Number of Passes

Number of Passes	Proportion Leaving System	Proportion Remaining in System
1	P_1	$1 - P_1$
2	$P_1 + P_2(1 - P_1)$	$1 - P_1 - P_2(1 - P_1)$
3	$P_1 + P_2(1 - P_1) + P_3(1 - P_1 - P_2(1 - P_1))$	$1 - P_1 - P_2(1 - P_1) - P_3(1 - P_1 - P_2(1 - P_1))$
4	$P_1 + P_2(1 - P_1) + P_3(1 - P_1 - P_2(1 - P_1)) + P_4(1 - P_1 - P_2(1 - P_1) - P_3(1 - P_1 - P_2(1 - P_1)))$	$1 - P_1 - P_2(1 - P_1) - P_3(1 - P_1 - P_2(1 - P_1)) - P_4(1 - P_1 - P_2(1 - P_1) - P_3(1 - P_1 - P_2(1 - P_1)))$

Table II—Proportions Leaving a Two-Vessel System After Various Number of Passes

	Vessel (I)	Vessel (II)	Proportion Leaving	Total Proportion Leaving
Two passes	1 pass	1 pass	p^2	p^2
Three passes	1 pass	2 passes	$p(1-p)$	$p^2 + p(1-p) + p(1-p)^2$
	2 passes	1 pass	$(1-p)p$	
	3 passes	0 passes	$(1-p)^2 p$	
Four passes	1 pass	3 passes	$p(1-p)^2$	$p^2 + 2p(1-p) + (1-p)^2 p$
	2 passes	2 passes	$(1-p)^2 p$	
	3 passes	1 pass	$p(1-p)^2$	

Table III—"Time-Proportion" Series for Effluent from a Continuous System Consisting of One or More Vessels in Series

Number of Vessels in Series	1	2	3	4	5	6	7	8	9	10
Proportion of Material Leaving Last Vessel	p	p^2	p^3	p^4	p^5	p^6	p^7	p^8	p^9	p^{10}

Number of passes is here used as a measure of retention time.

p and q are the values of $\left(\frac{V}{V+Q\tau}\right)$ for the particular values of V and $Q\tau$.

To develop the method of analyzing the "time-proportion" composition of the effluent from one or a series of devices of the type shown in Fig. 1, the simpler device of Fig. 2 will be used. This is an idealized diagrammatic representation of the fundamental actions and structures involved in the device shown in Fig. 1. Although Fig. 2 is employed mainly because it isolates the principal factors of the device shown in Fig. 1 for quantitative evaluation, it may well be pointed out that such an assembly represents a workable continuous reactor or combiner which in some instances may be used in place of the unit shown in Fig. 1.

Comparing Figs. 1 and 2, it can be seen that the pipe loop in Fig. 2, containing a volume of material V , is analogous to the mixing vessel. The material is circulated or turned over by a pump, which is analogous to the draft tube exhausting mixer, at a rate of Q units of volume per unit of time. The feed to the device enters through a feed leg which is analogous to the inlet nozzle, then passes through that section of the piping which is marked "A", which serves functions analogous to those performed by the draft tube of Fig. 1. The orifice, across which a prescribed loss in total head is taken, function analogously to the "homogenizing" mixer.

Using Fig. 2, we may now proceed to evaluate the "time-composition" of the discharge for the cases of a single continuous mixer, as well as for a series of identical continuous mixers. The approach is through the algebra of combinations.

First, let us consider the case when a single continuous mixer is employed. If R gal. per min. is the rate of feed to the system and if, as in all cases of practical design, R is substantially lower than the circulating capacity of the draft tube exhausting mixer (Q gal. per min.), then the proportion of

the effluent which will leave the system after only a single pass from the inlet to the outlet nozzle will be R/Q . Let $p = R/Q$.

It follows then that the proportion of material remaining in the system after one pass will equal $(1-p)$; and hence the proportion of material leaving on the second pass will equal $p(1-p)$. Similarly, if we continue the mechanism indicated above to obtain the values of the proportions leaving at the end of three passes, four passes, to n passes, we will obtain the values set forth in Table I. If $(1-p)$ is set equal to q the series of proportions leaving the system after various numbers of passes will take the form of p for one pass; pq for two passes; pq^2 for three passes; and so on to pq^{n-1} for n passes, as shown in the first line of Table III. This is an infinite series whose summation value for all values of n , going from 1 to infinity, is 1, or

$$\sum_{n=1}^{\infty} pq^{n-1} = 1 \quad (4)$$

since the sum of all the proportions must equal one.

If two identical vessels are operated in series, the shortest period of stay in the system must be two passes, that is, one pass in the first vessel and one pass in the second, and the proportion of material leaving the system after such a stay is p^2 . In other words, of the proportion p of one-pass material leave-

ing the first vessel a proportion equal to $(p)(p) = p^2$ will

be discharged from the second vessel. There are two ways in which material may contrive to leave the two-vessel system after three passes: (1) by making one pass in the first vessel and two passes in the second; and (2) by making two passes in the first vessel and one pass in the second. If we formulate these combinations, then

$$pQ(1-p) + pQ(1-p) = 2p^2q \quad (5)$$

will be the total proportion of material leaving the system after a stay of three passes. In words, of the proportion p which is discharged from the first vessel after a stay of one pass, a proportion equal to pq will stay for two passes in the second vessel; while, of the proportion pq which is discharged after two passes in the first vessel, a proportion p leaves the second vessel after a stay of one pass. The sum of the stated products then equals the total material leaving the system after a stay of three passes.

There are three ways in which material can stay in the system for a period of four passes: (1) by making one pass in the first vessel and three in the second; (2) by making two passes in the first vessel and two in the second; and (3) by making three passes in the first vessel and one in the second. If we formulate these combinations, it will be found that:

$$p(pq)^2 + p^2(pq) + p^3(p) = 3p^3q^2 \quad (6)$$

will be the total proportion of material leaving the system after a stay of four passes. These steps are summarized in Table II.

In like manner, it will be found that there are four ways in which material may remain in the system for a period of five passes; five ways for a period of six passes; and so on. If we extend the mechanism of the operations illustrated above in Equations (5) and (6) to all subsequent retentions in the system, we will obtain an infinite series in which the values indicated in the second row of Table III form the initial terms.

An exactly similar approach can be employed with a system of three identical vessels. The shortest period of retention in the system must be three

Fig. 2—A continuous combining system consisting of three vessels in series.



passes, and the proportion of material leaving the system after such a stay will be p^n , since the proportion p which is discharged from the first two vessels after a stay of two passes (i.e., one pass through each),

$$p(p) = p^2 \quad (7)$$

is discharged from the third after a stay of one pass in that vessel. For four passes we find that there are three combinations possible in a three-vessel system and when these are set down and added together the total proportion of material leaving the third vessel will be found to equal $3 p^3 q$. For five passes in three vessels, six combinations are possible and the total of the proportions leaving the third vessel will be found to be $6 p^4 q^2$. Applying the same method of analysis to all other retentions, i.e., six passes, seven passes, and so on to n passes, we will obtain an infinite series in which the values indicated in the third line of Table III are the initial terms.

Thus sufficient explanation of the method used has been presented to show that, as in the development of "time-proportion" series for one-, two-, and three-vessel systems, the proportion of the material leaving a system of m vessels after a retention of n passes in the system is a function of m and n , and may be written:

$$\phi(m, n) \quad (8)$$

By the use of operations common to

the calculus of finite differences (notably by employing the concepts of difference equations and the Laplace generating function), Brothman derived the general expression:

$$\phi(m, n) = \frac{(n-1)!}{(m-1)!(n-m)!} p^m q^{n-m} \\ = \binom{n-1}{m-1} p^m q^{n-m} \quad (9)$$

for all values of m from 1 to ∞ and for all values of n from m to ∞ . For example, in the case of three vessels and five passes, as noted above, the proportion of material leaving the system after five passes is seen from Equation (9) to be $(4 \cdot 3 \cdot 2 \cdot 1)/(2 \cdot 1) (2 \cdot 1) p^3 q^2 = 6 p^3 q^2$. Since the sum of all the proportions comprising the discharge must equal 1, as in Equation (3), we may write:

$$\sum_{m=1}^{\infty} \binom{n-1}{m-1} p^m q^{n-m} = 1 \quad (10)$$

The existence of Equation (10) fulfills the first step in our development, namely, the task of obtaining a means of computing the "time-proportion" composition of the effluent for a system consisting of one or more units of the type shown in Fig. 1. The time of retention, it will be noted, has thus far been evaluated in terms of the number of passes or cycles executed from the point of inlet to the point of

discharge in one vessel. We may now evaluate the various retentions in terms of normal time measurements by pointing out that in Fig. 2 the time t_n required for a single pass from inlet to outlet, in a vessel having a total holding capacity V , will be:

$$t_n = \frac{V}{Q} \quad (11)$$

since a condition of the design in both Figs. 1 and 2 is that the inlet and outlet nozzles be so positioned as to make the statement as closely true as possible. All other stays or retentions in the system would then take the form of nt_n , where n is the number of passes achieved. However, it should be noted that expressions can be derived to take into account any other positioning of the inlet and outlet nozzles. The derivation of such expressions takes on a form which is demonstrated in a subsequent installment of this series. The above expressions are also predicated upon a constant-volume reaction system. Since most liquid-phase reaction systems are not characterized by appreciable deviations from constant volume, these expressions are good and sufficient for the overwhelming majority of problems encountered. The deviation of the expressions when changes in volume are involved become slightly more complicated.

New Approach to Continuous Reactor Design—II

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Chem. & Met. INTERPRETATION

This is the second of three articles dealing with a new theoretical approach to the design of continuous processing equipment for carrying out liquid-phase reactions and other combining and mixing operations. Methods developed by the authors enable the engineer to design readily for a close approximation of the result which will actually be achieved by equipment so designed, and to do so with a greater degree of certainty than by earlier methods. The first article, appearing in our July number, derived the basic expression showing the retention time of each proportion making up the effluent from a continuous liquid-phase system of one or more vessels in series. The present article couples this expression with the combining-velocity characteristics for various kinds of combining phenomena. The last article, to appear in an early issue, will show how the new methods are utilized in an actual design problem, demonstrating the effect of variations in equipment capacity and arrangement.—Editors.

CONTINUOUS PROCESSING has numerous important advantages for the chemical and process industries, as was explained in the first article of this series (*Chem. & Met.*, July 1943, pp. 111-114 incl.). However, the design of continuous reactors and other combining equipment has been hindered in the past by the lack of a rational mathematical theory capable of giving performance predictions which would agree closely with the actual capabilities of equipment so designed. The authors have developed such an approach, the fundamental basis of which was outlined in the first article.

It was there stated that the object would be to calculate the mean level of completion of a particular combining phenomenon in the effluent from a continuous mixer, dissolver, or reactor, consisting of one or more vessels in series, according to the equation:

$$S = P_1 f(t_1) + P_2 f(t_2) + \dots + P_n f(t_n) \quad (1)$$

where S is the mean completion of the combining phenomenon; P_1, P_2 , etc., are the proportions of the discharge respectively corresponding to the retention times of t_1, t_2 , etc.; and $f(t_1), f(t_2)$, etc., are the extents of completion of the combining phenomenon at hand, in terms of functions of t_1, t_2 , etc. By an approach through the algebra of com-

bination it was shown that the proportion of material leaving a continuous system of n vessels after a retention time of n passes in the system was equal to $\phi(m, n)$, or

$$\phi(m, n) = \binom{n-1}{m-1} p^m q^{n-m} \quad (9)$$

for all values of m from 1 to ∞ and all values of n from m to ∞ ; and that, furthermore,

$$\sum_{m=n}^{\infty} \binom{n-1}{m-1} p^m q^{n-m} = 1 \quad (10)$$

since the sum of all proportions comprising the discharge must equal 1. In these equations $q = (1 - p)$ and $p = R/Q$, where R is the rate of feed to the system (or rate of discharge), in gallons per minute, and Q is the circulating capacity of each individual mixer or reactor, also in gallons per minute. Finally it was noted that

$$t_n = V/Q \quad (11)$$

where t_n is the time required for a single pass from inlet to outlet in a reaction vessel or mixer having a total holding capacity of V gal. and having a general structure such as that shown in Fig. 1 of the first article in this series.

The existence of Equations (9) and

(10) makes it possible to calculate the length of time that any portion of the effluent has remained in a continuous combining system, when the throughput, number of vessels, capacity and circulating characteristics are known. Hence, it is only necessary to couple the information so obtained with the combining-velocity characteristics of a particular process to be able to predict the degree of completion of the process that will be obtained under the assumed conditions.

First, let us consider a first-order reaction. The integrated form of a first-order-reaction velocity equation is

$$t = \frac{2.303}{k_1} \log_{10} \frac{a}{a-x} \quad (12)$$

where k_1 is the reaction-velocity constant under a given condition of temperature, pressure, and agitation; a is the concentration of the starting reactant in mols per unit of volume in the reaction system; x is the depletion in concentration of the starting reactant in mols per unit of volume after a time interval of t ; and t is the time of stay in the system after the desired reaction conditions of temperature, pressure, and agitation have been established. We may write t in terms of $n t_n$ (Equation 11), and hence

$$n t_n = \frac{2.303}{k_1} \log_{10} \frac{a}{a-x} \quad (12a)$$

It is obvious that the completion of the reaction could be measured in terms of $[a/(a-x)]$, and hence we may write

$$\lambda_1 n = \log_{10} \frac{a}{a-x} \quad (13)$$

where

$$\lambda_1 = k_1 t_n \quad (14)$$

and, finally,

$$\frac{a}{a-x} = e^{\lambda_1 n} \quad (15)$$

Similarly, $[b(a-x)/a(b-x)]$, as the measure of completion of a second-order reaction,* may be written

$$\frac{b(a-x)}{a(b-x)} = e^{\lambda_2 n} \quad (16)$$

where

$$\lambda_2 = t_n k_2 (a-b) \quad (17)$$

* This is the measure of completion for a bimolecular reaction when the two reactants are not present in stoichiometric balance.

Table IV—Approximate Reciprocity Requirements for Mixers

Thick Circulation	Thin	Medium	Viscous	Thin	Medium	Viscous
1-2	1/100	1/20	1/2	1/100	1/20	1/2
2-3	1/100	1/20	1/2	1/100	1/20	1/2
3-4	1/100	1/20	1/2	1/100	1/20	1/2
4-5	1/100	1/20	1/2	1/100	1/20	1/2
5-6	1/100	1/20	1/2	1/100	1/20	1/2
6-7	1/100	1/20	1/2	1/100	1/20	1/2
7-8	1/100	1/20	1/2	1/100	1/20	1/2
8-9	1/100	1/20	1/2	1/100	1/20	1/2
9-10	1/100	1/20	1/2	1/100	1/20	1/2
10-11	1/100	1/20	1/2	1/100	1/20	1/2
11-12	1/100	1/20	1/2	1/100	1/20	1/2
12-13	1/100	1/20	1/2	1/100	1/20	1/2
13-14	1/100	1/20	1/2	1/100	1/20	1/2
14-15	1/100	1/20	1/2	1/100	1/20	1/2
15-16	1/100	1/20	1/2	1/100	1/20	1/2
16-17	1/100	1/20	1/2	1/100	1/20	1/2
17-18	1/100	1/20	1/2	1/100	1/20	1/2
18-19	1/100	1/20	1/2	1/100	1/20	1/2
19-20	1/100	1/20	1/2	1/100	1/20	1/2
20-21	1/100	1/20	1/2	1/100	1/20	1/2
21-22	1/100	1/20	1/2	1/100	1/20	1/2
22-23	1/100	1/20	1/2	1/100	1/20	1/2
23-24	1/100	1/20	1/2	1/100	1/20	1/2
24-25	1/100	1/20	1/2	1/100	1/20	1/2
25-26	1/100	1/20	1/2	1/100	1/20	1/2
26-27	1/100	1/20	1/2	1/100	1/20	1/2
27-28	1/100	1/20	1/2	1/100	1/20	1/2
28-29	1/100	1/20	1/2	1/100	1/20	1/2
29-30	1/100	1/20	1/2	1/100	1/20	1/2

As a measure of completion of a third-order reaction,† may be written

$$\left[\left(\frac{a}{a-b} \right)^{b-a} - \left(\frac{b}{a-b} \right)^{a-b} \right] \quad (15)$$

where $\lambda = \frac{a}{b}$ (19)
Finally, $\left(\frac{C_0}{C_0 - C} \right)$ as a measure of completion of a solids-dissolving or gas-dissolving operation may be written

$$\frac{C_0}{C_0 - C} = \lambda \quad (20)$$

where $\lambda = \frac{C_0}{C_0 - C}$ (21)

In these equations the terms not already defined include: k_2 and k_3 , the reaction-velocity constants respectively for second- and third-order reactions under the given conditions of temperature, pressure, and agitation; k_d , the solution-velocity constant under the given conditions of temperature, pressure, and agitation; a , b and c , the concentrations of materials (a) (b) and (c) at the start of the reaction, in moles per unit volume; x , the depletion in concentration of any reactant in time t in moles per unit volume; A , the area of contact between gas and liquid, or solid and liquid phases in physical dissolving systems under the given conditions of temperature, pressure, and agitation; C_0 , the concentration at the saturation limit of the solute in the solvent in moles per unit volume; and C , the concentration of solute dissolved under given conditions of temperature, pressure, and agitation at end of time interval t .

From the above, it will be observed that when combining phenomena of the types already treated are handled

† This is the measure of completion for a bimolecular reaction where the two reactants are in stoichiometric balance with one another.

continuously, the $f(t)$ of Equation (1) will take the generalized form of

$$f(t) = \sum_{n=1}^{\infty} \left(\frac{a^n - b^n}{a - b} \right) \quad (22)$$

Thus for a system of n vessels (where n may equal a single unit or any number of vessels in series), Equation (1) may now be written, in view of Equation (22),

$$S = \left(\frac{a^n - b^n}{a - b} \right) \quad (23)$$

where $n = 1$ for the first term, $n = 2$ for the second term, $n = 3$ for the third term, etc.; where S is the mean completion of the combining phenomenon in question, as expressed in terms of the appropriate measure indicated in Equations (15), (16), (18), and (20); and λ is given its appropriate values according to Equations (14), (17), (19), and (21). In view of Equation (10), we may express Equation (23) as

$$S = \sum_{n=1}^{\infty} \left(\frac{a^n - b^n}{a - b} \right) \quad (24)$$

By an extension of the mathematics leading to Equation (19), with special application to Equation (24), it can be derived the following explicit expression for S :

$$S = \left(\frac{a^p - b^p}{a - b} \right) \quad (25)$$

where the values of p , q , and λ are determined in accordance with our previous remarks. A qualification must be placed on the use of Equation (25). If we examine Equation (24) which contributes to the development of (25), it will be noted that S must have a finite value. This limitation arises from the fact that the laws of chemical equilibria restrict the completion of combining phenomena to a finite level—in other words, no matter how complete a combining phenomenon may seem to be, there exists some (at least infinitesimal) residue of uncombined material. If we test Equation (24) for the conditions under which it will be convergent by means of the ratio method for convergency, it will be found that

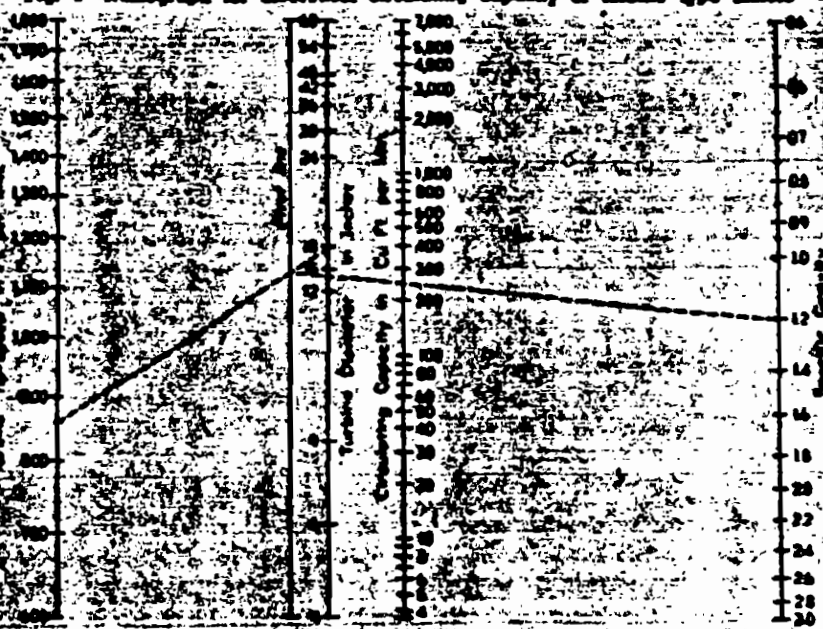
$$\lim_{n \rightarrow \infty} \frac{a^{n+1} - b^{n+1}}{a^n - b^n} = q \quad (26)$$

and

$$\lim_{n \rightarrow \infty} \frac{a^{n+1} - b^{n+1}}{a^n - b^n} = q \quad (27)$$

Where $q < 1$, Equation (24) will yield a finite value for S . Equation (25) itself shows that q can never equal 1 and yield a finite value for S . Hence the limitation on Equation (25) is that q must be less than 1.

Fig. 4—Nomograph for theoretical circulating capacity of turbine type mixers



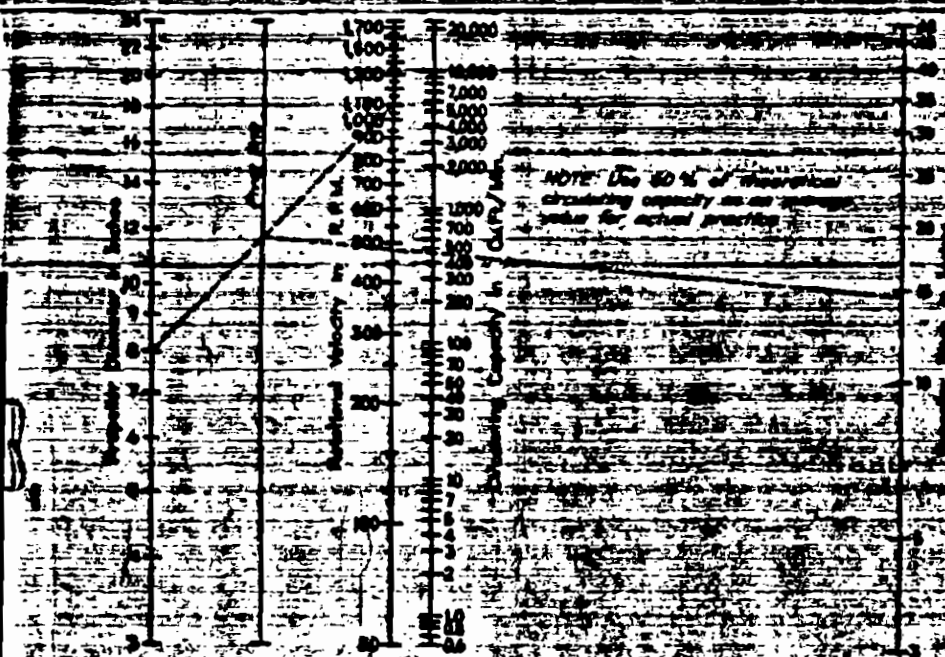


Fig. 1—Nomograph for theoretical circulating capacity of propeller type agitators at 100 percent slip

No treatment of the subject with a claim to utility could end with Equation (25) and the above-described limitation thereon. Indeed, it would be necessary at least to touch on the following questions pertaining to Equation (25): (1) How can the effect of "homogenizing" mixing be considered? (2) How would reactions and physical combining phenomena involving heterogeneous systems be handled? (3) How would reactions whose completion vs. time curves deviate from their theoretical order be handled? (4) How would series reactions be handled? (5) How can the value of Q , which enters in forming the value of p , be computed? (6) Within what limits does t usually run?

The effect of "homogenizing" mixing in determining the efficiency of continuous combiners expresses itself by its influence in determining the velocity characteristic or characteristics of a particular combining phenomenon. In fact, three conditions may determine these characteristics, that is, temperature, pressure, and agitation. If the conditions of temperature and pressure are kept constant, the effect of agitation will be found to vary inversely with the extent of diffusivity of the combining materials with one another and/or with the dispersion medium. For any given condition of vessel design, any given tank charge, and a given intensity of work input, any one of three main types of agitation conditions may exist. The three possible categories into which the agitation condition may fall include: (1) A condition of non-uniformly diffused tur-

bulence; (2) A condition of uniformly diffused minimum turbulence; and (3) A condition of uniformly diffused above-minimum turbulence (as referred to condition 2).

Condition (2) may be compared to that minimum level of linear velocity which, according to the concept of Reynolds' Number, is adequate to establish a condition of turbulent flow for a given viscosity, density and duct diameter. Conditions (1) and (3) are respectively below and above this point of transition to turbulence. The relation between reaction-velocity constant and condition of turbulence in a combining unit is analogous to the relation between film coefficient and linear velocity in heat-exchange equipment. For heat-exchange equipment a critical level of turbulence exists beyond which an increase in turbulence will be accompanied by only a small increase in film coefficient. Likewise, for a mixing system a critical level of turbulence exists beyond which an increase in turbulence will be accompanied by only a small increase in reaction-velocity constant.

Thus, the most economical balance that can be achieved between film coefficient and work input to overcome friction drop in a heat exchanger is analogous to the most economical balance that can be achieved between reaction-velocity constant and work input in the form of agitation in a combining system. Likewise, under normal circumstances the fluid velocity for optimum operating conditions in a heat exchanger is analogous to the level of turbulence demanded for optimum op-

erating conditions in a combining system.

Table IV is offered as a means of estimating the intensities of work input which will establish, for containers of indicated volumes, conditions of agitation corresponding to Conditions (1), (2) and (3) above.

HETEROGENEOUS SYSTEMS

The method of handling heterogeneous reaction and physical combining systems may most often be considered to be a special case of handling the problems of continuous processing presented by reactions which deviate from known reaction orders (as will be treated below). This is true because the completion velocities of heterogeneous systems involve consideration of the area of contact between the combining phases. However, this contact area is not usually susceptible of quantitative evaluation. Hence, as for the case of combining phenomena which deviate from the known reaction orders, empirical relationships between completion levels and time are therefore the usual form such data takes.

The job of handling reactions which deviate from their theoretical reaction orders falls into two separate categories: (1) That of handling reactions which, despite their apparent theoretical classification, obey the laws of another order. An example is the case of theoretical second-order reactions which obey the law of a first-order reaction, and are hence pseudo-molecular reactions; and (2) The job of handling reactions which do not conform to any known reaction order.

The handling of Category (1) reduces to giving the completion of such phenomena by the methods applying to the reaction order which they do follow in fact. The task of computing systems which belong to Category (2) reduces to obtaining an empirical equation for the completion vs. time curve demonstrated by the combining system under certain processing conditions of temperature, pressure, agitation, and formulation. Such equations should be set in the form:

$$C = \frac{1}{1 + \sum_{i=1}^n \frac{1}{C_i}} \quad (26)$$

when C is the completion characteristic for the given system. Solution of the problem then requires algebraic manipulation in order to obtain the implicit expression:

$$\sum_{i=1}^n \frac{1}{C_i} = \frac{1}{C} - 1 \quad (27)$$

which results in Equation (26). For example, assuming that the empirically determined equation took the integrated form of the reaction velocity equation for the case where two identical molecules of two different molecules in a

FIG. 7

New Approach to Continuous Reactor Design—III

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Chem. & Met. INTERPRETATION

In the two earlier articles of this series, the necessary mathematics was developed for a new theoretical approach to the design of continuous processing equipment for handling liquid-phase reactions as well as other combining and mixing operations. These methods permit the engineer to predetermine the performance of such equipment with a much higher degree of assurance than he could achieve by earlier methods. In the first article, in July, the authors derived the basic expression showing how long each portion of the effluent from a continuous liquid-phase system will remain in one or more vessels in series. The second article, in August, coupled this expression with the combining-velocity characteristics of various kinds of combining phenomena. The present article, which is the last of the series, takes an existing plant comprising ten identical reaction vessels, and for a typical reaction determines the capacity of the equipment when the vessels are operated, first batchwise, then continuously with four different arrangements of the vessels. The article also shows how for a constant throughput, the various arrangements contribute to the degree of completion of the reaction.—*Editors*

ADVANTAGES of continuous operation in the chemical and process industries are well known, including the opportunity for greater output for the same equipment investment (or a closer approach to completion of the reaction); an equal output at a lesser investment; easier operation at lower operating cost; and generally a better and more uniform product. Often, however, the difficulties of designing accurately for continuous processing have thrown the choice to batch operation despite the preference for the first-mentioned method. A new mathematical approach to design for continuous processing in liquid-phase reactions and other combining systems is now available which facilitates and systematizes the necessary calculations, and at the same time permits the designer to estimate closely what the actual performance of the system chosen will be.

In the first two articles of this series (*Chem. & Met.*, July 1943, p. 111, and August 1943, p. 107) the mathematical basis for the new approach was presented and the necessary equations developed. The characteristics of cer-

tain types of reaction vessels were discussed, and nomographs and a tabulation were given which facilitate actual design. Methods of handling reactions which do not perform according to theory were also considered. It was shown that

$$S = \left(\frac{p-1}{1-p} \right)^{\frac{1}{e}} \quad (26)$$

where S is the mean completion of the combining phenomenon in a system comprising n vessels; $p = R/Q$, where R = the feed (or discharge) rate of the system in gallons per min. and Q = the circulating capacity of each individual mixer or reactor, also in gallons per min.; $e = (1 - p)$; e = the base of the natural logarithm system, 2.71828 +; and λ is a factor determined by the reaction velocity constant k ; the minimum time a particle can remain in the system shown in Fig. 1 of the first article ($t_m = V/Q$, where V = the holding capacity of each vessel, in gallons); and by the initial concentrations of the reactants, a and b , in moles per liter for the case of a bimolecular reaction.

As an illustration of the application

of the method discussed in the first two articles, assume that an existing plant contains ten identical reaction vessels operating batchwise to carry out the following reaction:



The reaction follows the normal curve for a second-order reaction. The initial concentrations of A and B are 10 moles per liter and 5 moles per liter, respectively. The number of moles of A and B reacting in 3 hours is 4. Or, at the end of 3 hours the mol percent completion of reaction referred to reactant B is 80 percent. The time consumed in charging the vessels is 20 minutes. The discharging time is 10 minutes. The time required to bring the batch in each vessel up to reaction temperature by means of internal steam coils is 45 minutes; and no appreciable amount of reaction takes place prior to the time when the vessel's charge is brought to the final processing temperature.

Each vessel has a diameter of 4 ft. and a straight side vessel height of 6 ft. The holding capacity V of each vessel is 610 gal. However, the vessels are "worked" batchwise at 75 percent of their total holding capacity. Each vessel is equipped with a top-entering dual-propeller mixing assembly consisting of two 8-in. diameter x 14.5-in. mean-pitch three-bladed marine propellers, rotating at 1,125 r.p.m. The propellers are located one-quarter and half the way up from the vessel bottom, respectively.

In the first place, (1) what is the batch-operation capacity of the plant?

Then, (2) what is the increased continuous-operation capacity of the plant assuming the same percentage of completion for the reaction is desired, if: (a) The ten vessels are placed in series? (b) Two parallel systems of five vessels in series are used? (c) Five parallel systems of two vessels in series are used? and (d) Ten parallel systems of one vessel in series are used?

Finally, (3) assume that instead of an increased plant capacity for turning out 80 percent completely reacted material, a higher percentage of completion is desired for the plant's present productive capacity. It is hoped

that thereby tests of "working" the illustration for the recovery of unreacted A and B may be reduced or eliminated. To what extent can this be accomplished if the four vessel arrangements of Problem (2) are used?

Problem 1—The batch operation capacity of the plant in gallons per min. can be found from the following considerations:

The total processing time per batch is the sum of the charging time, heating-up time, actual reaction time, and discharging time; or 30 min. + 50 min. + 3 hr. + 10 min. = 4.25 hr.

Where 610 gal. is the total holding capacity V of each vessel, the batch size can be found by the equation $(610) = (4.25) (Q)$. To assure accuracy in the use of Equation (25), it is necessary to work to a considerable number of decimal places.

Since ten vessels are employed, the batch capacity of the plant will be $(10) (457.5) = 4,575$ g.p.m. of 80-percent-completion material.

Problem 2—Assume that the design of each vessel is modified in accordance with Fig. 1 (July 1942, p. 112).

2a. Let the ten available and modified units be hooked up in series according to Fig. 8. The theoretical circulating capacity Q of the propeller mixers is, from the nomograph, Fig. 6, 475 a.f.m. However at 80 percent efficiency, the actual circulating capacity will be $(0.80) (475) = 380$ a.f.m. or 2,130 g.p.m.

The smallest length of time which a particle could spend in each vessel will be, from Equation (11), $t = V/Q = 610/2,130 = 0.286385$ min.

The reaction velocity constant k for a second-order reaction is

$$k = \frac{2.303}{t} \log \frac{a(a-x)}{b(b-x)}$$

where a = initial concentration of reactant A in mole per liter, b = initial concentration of reactant B in mole per liter, and x = number of mole of A and B reacting in 1 gramme.

$$k = \frac{2.303}{150(10-25)} \log \frac{5(10-0)}{10(5-0)} = 0.00172$$

For a second-order reaction, according to Equation (17), $\lambda = k(a-b)$ = $(0.00172) (0.001231) = 2.117 \times 10^{-6}$

The quantities p and q are defined as $p = R/Q = 2/2,130$, and $q = (1-p) = (1-2/2,130)$.

The desired mean completion \bar{p} is the efficient from the given system is then given as

$$\bar{p} = \frac{1-(1-p)^{10}}{10(1-p)} = \frac{1-(1-2/2,130)^{10}}{10(1-2/2,130)}$$

Since $n = 10$, and $p = 2/2,130$, from Equation (25),

$$\bar{p} = \frac{1-(1-p)^n}{n(1-p)}$$

$$\text{and } p = 0.0172. \text{ Therefore, } \bar{p} = (0.0172) (2,130) = 36.8 \text{ g.p.m.}$$

The percentage increase in plant capacity will be, therefore, $(100) (36.8 - 17.9) / 17.9 = 104.5$ percent.

2b. Let the ten available and modified vessels be hooked up as shown in Fig. 9. In this system n will equal 5, since the system will consist of two tandems of five vessels in series. Hence, by Equation (25),

$$\bar{p} = \frac{1-(1-p)^n}{n(1-p)}$$

$$\text{and } p = 0.00896. \text{ Therefore, } \bar{p} = (0.00896) (2,130) = 19.06 \text{ g.p.m.}$$

The plant capacity will be (2) (19.06) = 38.1 g.p.m. and the percentage increase in plant capacity will be, therefore, $(100) (38.1 - 17.9) / 17.9 = 113$ percent.

2c. Let the ten available and modified vessels be hooked up as shown in Fig. 10. In this system n will equal 2, since the system will consist of five vessel tandems of two vessels in series. Hence, by Equation (25),

$$\bar{p} = \frac{1-(1-p)^n}{n(1-p)}$$

$$\text{and } p = 0.00416. \text{ Therefore, } \bar{p} = (0.00416) (2,130) = 8.86 \text{ g.p.m.}$$

The plant capacity will be (2) (8.86) = 17.72 g.p.m. and the percentage increase in plant capacity will be, therefore, $(100) (17.72 - 17.9) / 17.9 = -1.1$ percent.

$(0.00416) (2,130) = 8.86$ g.p.m. The plant capacity will be (5) (8.86) = 44.3 g.p.m. and the percentage increase in plant capacity will be, therefore, $(100) (44.3 - 17.9) / 17.9 = 148$ percent.

2d. Let the ten available and modified vessels be hooked up as shown in Fig. 11. In this system n will equal 1, since the system will consist of 10 vessels in parallel. Hence, by Equation (25),

$$\bar{p} = \frac{1-(1-p)^n}{n(1-p)}$$

$$\text{and } p = 0.00243. \text{ Therefore, } \bar{p} = (0.00243) (2,130) = 5.18 \text{ g.p.m.}$$

The plant capacity will be (10) (5.18) = 51.8 g.p.m. and the percentage increase in plant capacity will be, therefore, $(100) (51.8 - 17.9) / 17.9 = 212$ percent.

Problem 3—The third problem mentioned above was to determine the increase in completion of the reaction that would result when the four continuous-flow arrangements were used, but with the 17,941.2 g.p.m. throughput rate of Problem (1).

3a. Let the ten available and modified units be hooked up in series according to Fig. 8. Then the following data obtain: $R = 17,941.2$ g.p.m.;

Fig. 8-11—Four arrangements of ten vessels used in last problems

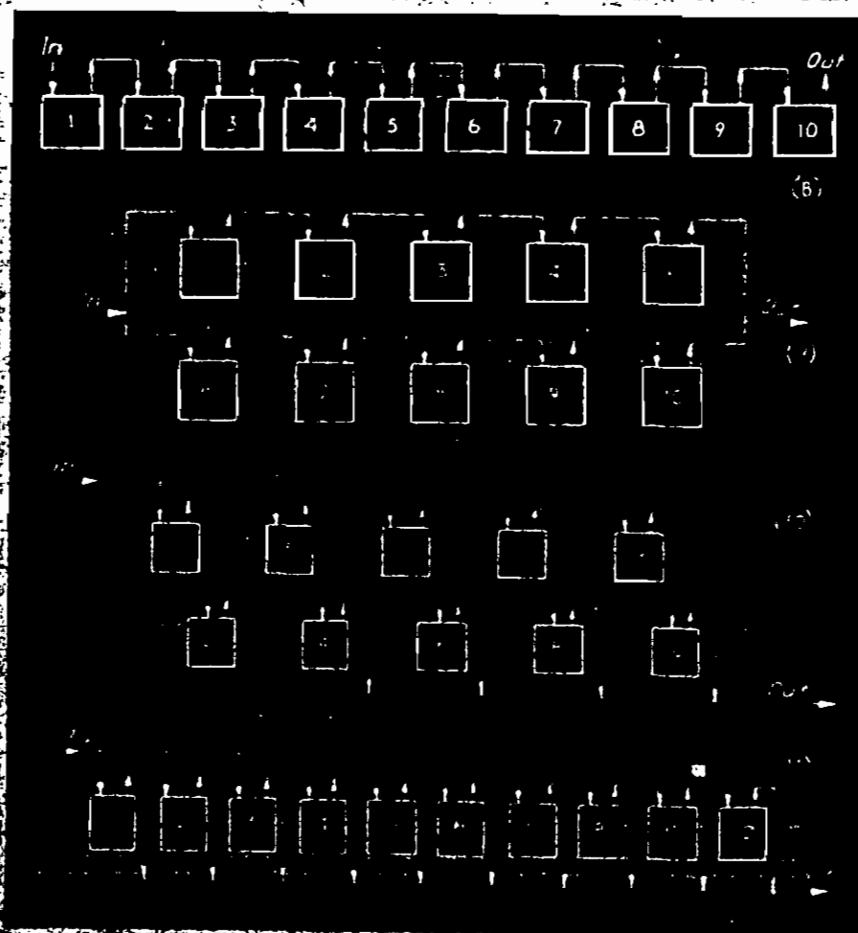


Table VII—Summary of Problem Results for Various Methods of Operation

	Hookup Employed		Two Tandems—Five Vessels		Five Vessels in Series		Five Vessels in Parallel	
	10 Vessels in Series	10 Vessels in Parallel	10 Vessels in Series	10 Vessels in Parallel	10 Vessels in Series	10 Vessels in Parallel	10 Vessels in Series	10 Vessels in Parallel
Plant capacity with 50 per cent reaction completion, g.p.m.	17.9	17.9	17.9	17.9	17.9	17.9	17.9	17.9
Percent capacity increase at 80 percent reaction completion with continuous instead of batch operation	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Percent completion of reaction with continuous operation while spacing at batch capacity of 17.9 g.p.m.	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
Standard mean deviation from mean holding time of 340 min. at throughput rate of 17.9 g.p.m.	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

$\mu = 2.130$ g.p.m.; $\sigma = 0.001221$; $\lambda = 0.280385$ min.; $\lambda = 0.001748$; $\rho = \frac{2.130}{0.001748} = 0.008423$; $q = 1 - \rho = 0.991577$; and $m = 10$. Then $\frac{5(10 - \rho)}{10(5 - \rho)} = \left(\frac{0.008423}{1 - 0.991577} \right)^{1/5}$ and $\rho = 4.74278$ mole. The percentage completion achieved for the throughput would be $(100) (4.74278) \div 5 = 94.86$ percent.

20. Let the ten available and modified units be hooked up according to Fig. 9, consisting of two tandems of five vessels in series. Then the following changes in the data obtain: $R = 17.9412/2 = 8.9706$; $\rho = 8.9706/2.130 = 0.004212$; $q = 1 - 0.004212 = 0.995788$; and $m = 5$. Then:

$\frac{5(10 - \rho)}{10(5 - \rho)} = \left(\frac{0.004212}{1 - 0.995788} \right)^{1/5}$ and $\rho = 4.82238$ mole. The percent completion achieved for the throughput will be $(100) (4.82238) \div 5 = 96.45$ percent.

21. Let the ten available and modified units be hooked up according to Fig. 10, consisting of five tandems of two vessels in series. Then the following changes in the data obtain: $R = 17.9412/5 = 3.58824$; $\rho = 3.58824/2.130 = 0.001685$; $q = 1 - 0.001685 = 0.998315$; and $m = 2$. Then:

$\frac{5(10 - \rho)}{10(5 - \rho)} = \left(\frac{0.001685}{1 - 0.998315} \right)^{1/5}$ and $\rho = 4.99990$ mole. The percent completion achieved for the throughput will be $(100) (4.99990) \div 5 = 99.998$ percent.

22. Let the ten available and modified vessels be hooked up as shown in Fig. 11, consisting of ten vessels in parallel. Then the following changes in the data obtain: $R = 17.9412/10 = 1.79412$; $\rho = 1.79412/2.130 = 0.0008423$; $q = 1 - 0.0008423 = 0.999158$; and $m = 1$.

Computation in this instance results in a value for q^m greater than unity.

The development of Equation (25) and the conditions imposed upon it by Equation (25) indicate that the application of Equation (25) to this computation would not yield a meaningful value for S . What is the physical interpretation of this condition? Briefly, the establishment of an R such that q^m is greater than unity means that a condition will be set up in the vessel such that the products of the reaction constitute too great a source of dilution for the incoming reactants to make "contact." Indeed, a state of "infinite dilution" of the reactants in the products of the reaction would thus have been achieved.

A study of the tabulated results of these problems, shown in Table VII, is fruitful in developing an appreciation of the significance of the results and in developing thereby a means of selecting the optimum arrangement of the given equipment.

It is apparent that either of the two sets of values computed in Problems (2) and (3) may be used to estimate the comparative efficiency of each of the given arrangements. This is either (1) The maximum throughput rate which may be employed in each arrangement to yield an identical completion of reaction in the effluent; or (2) The completion of reaction characterizing the effluent in each arrangement under an identical throughput rate in each case constitute thoroughly interchangeable criteria of efficiency. Therefore, it should be noted that the remarks which are made below in explanation of the results shown in Row (1) of Table VII reflect equally upon results in Row (2).

Brothman found that, for all values of numbers of vessels in series, the expression for the "standard mean deviation" from the mean holding-time equals $(1/\rho)\sqrt{mq}$. The values of the "standard mean deviation", computed accordingly, for the case of the identical throughput rate of 17.9 g.p.m. are given in Row (4) of Table VII. The fact that the extent of completion

of the reaction, for the given mean, tends to increase as the "standard mean deviation" increases, gives the clue to the explanation of the results and provides us furthermore with a criterion for making the final selection of the arrangement to be used.

Drawing an analogy between the significance of the "standard mean deviation" from the mean holding-time in the case of continuous combining equipment, and the role assumed by the "standard mean deviation" in the field of statistics, it may be observed that in both cases the greater the "standard mean deviation" from the mean, the less efficient or "competent" is the mean in estimating any phenomenon or event which is related to the mean.

Therefore, where for the case of batchwise combining operations the "standard mean deviation" from a given holding-time is virtually zero, the mean holding-time within the system precisely determines the completion of the combining phenomenon according to the statement that the completion of the combining phenomenon is a function of time. On the other hand, it stands to reason that where the "standard mean deviation" from the mean holding-time increases, the deviation as to completion (as referred to that which would be expected on the basis of the mean holding-time alone) should also increase. The deviation in the positive direction which characterizes the completions yielded upon increase in "the standard mean deviation" in the given example follows from (a) The logarithmic or exponential nature of the completion-time curve obtaining for the given combining phenomenon; and (b) The dispersion of significant values of P (the proportions of the discharge for various retention times) with respect to time obtaining in each case.

Now, in what manner could the magnitude of the "standard mean deviation" from the mean holding-time conceivably affect the decision as to which arrangement should be used? To answer this question involves pointing home the fact that a large "standard mean deviation" from a mean indicates in our case a wide dispersion of significant values of P on both sides of the mean; while a small "standard mean deviation" from the mean indicates a "bunching" or narrowing of the significant values of P within a limited band about the mean. In reactions where, as in the case of many organic syntheses, the prolonged retention of a reaction product within a system is essential to the reaction, it is to be expected that arrangements involving large "stand-

As a matter of fact, it might well be that the goal of restricting the "standard mean deviation" would not only force the use of a ten-in-series arrangement, but would furthermore make necessary a stepping-up of the rate of throughput at the expense of the obtained completion of reaction as a means of sharply restricting the "standard mean deviation."

In this connection, it might be well to point out that Brothman's work has indicated that approximations as to the precise proportions of materials passing from a continuous combining system within set deviations from the mean holding-time may be obtained by the use of well-known theorems taken from the field of mathematical probability. A useful theorem in this connection is that of Bienayme-Tchebycheff. The proper coordination of such theorems with the mathematics used to

derive the basic formulas need not be good and proper, since the branch of mathematics used here is known as the field of probability.

There are, of course, other considerations which might influence the decision as to which arrangement should be used. These might include:

- (a) The complexity of the piping and control system required to assure a uniform rate and quality of feed to a parallel system involving a large number of units;
- (b) The capacity of the equipment comprising the subsequent stages of a continuous hookup; and
- (c) The economical considerations involved; etc. In a word, the designing of continuous plants involves the consideration and skillful interpenetration of a host of factors, many of which may be peculiar to the particular problem at hand.

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Batch-Continuous Process for Buna-S

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Batch-Continuous Process for Buna-S

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Chem. & Met. INTERPRETATION

The authors have developed an arrangement of equipment for producing the butadiene-styrene type of synthetic rubber latex by either a batch or a continuous process, employing the same equipment, but with a different setting of the valves. Such a hook-up enables the user to employ either type of operation at will, also permitting batch starting and shutting-down when the continuous process is used. The equipment layout is based on a rigorous mathematical approach to the problem of continuous reacting and introduces new features in the recovery of uncombined reactants to assure efficient and trouble-free operation.—Edman.

SO FAR, in the United States, sufficiently extensive experience with the butadiene types of synthetic rubbers has not been accumulated to permit the standardization of optimum processing procedures and arrangements of equipment, nor to indicate the best possible design of the individual items of equipment. The urgent demands of the war effort makes a gradual and highly organized investigation almost impossible, but fortunately there is a background of experience in other industries which should be of material assistance. For example, numerous comparable problems have been solved in the synthetic resin industry. If precise analogies from synthetic resin chemistry are not available, still various unit aspects are decidedly similar.

For example, synthetic resins are also polymers and some of them, such as the vinylite resins, are also co-polymers, as are the Buna-type rubbers. Like rubber synthesis, many resins require controlled reaction temperatures and the removal of heat of polymerization during the reaction. Production of the coumarone-indene resins is similar to that polymerization occurs in a heterogeneous reaction system, while that of the phenol-formaldehyde and urea-formaldehyde resins is similar in that the reaction product exists as the discontinuous phase in an emulsion system.

Resin equipment experience is also directly applicable in the design of many of the elements of Buna plant equipment. For example, analogy gives valuable information on the optimum size of autoclaves, the kind and intensity of agitation, and on the details of agitators, stuffing boxes,

shaft guides and other appurtenances.

At the present time most of the development work on Buna type rubbers in the United States has been carried out by batch methods of operation. However, it can be shown that in addition to various economies in heat and electrical consumption which are inherent in continuous operation, the latter method also makes possible an increase in capacity with the same volume of tankage as great as 40 percent in certain plant sizes. The design of plant described here has been arranged to permit either batch or continuous operation. The same equipment is employed in either case, but the grouping of the equipment is altered by the setting of the valves, depending on whether batch or continuous operation is chosen. Therefore, the arrangement is such that a shift to continuous production can readily be made. Furthermore, the hook-up allows the equipment to be started batchwise, run continuously, and then shut down under batch operation when operation is to be discontinued, to prevent loss of valuable materials.

The accompanying flowchart, Fig. 1, is a somewhat simplified version of that for a plant having a batch capacity of 7,500 long tons per year and a capacity under continuous operation of about 10,500 long tons per year. The composition of the reaction mixture by volume is assumed to be: 81.5 percent butadiene; 10.42 percent styrene; 10.42 percent soap solution; 0.56 percent chain directing agent (catalyst); and 47 percent treated water. The polymerization reaction cycle is taken as 24 hours on the batch basis, with the assumption of 81 percent

completion of the reaction based on the starting quantities of butadiene and styrene. The operating conditions discussed below are not necessarily optimum but are given merely to illustrate the proposed method of operation.

STORAGE CAPACITY

The precise storage tank volume needed for butadiene, styrene and the catalyst varies with the ease with which replenishments of supply for the plant can be scheduled. When continuous apparatus is employed for supplying treated water and soap solution, the reserve capacity for these materials should be based on requirements during the probable outage time for repair.

Plants for Buna-S production must take precautions to prevent the spontaneous polymerization of both butadiene and styrene under moderate storage temperatures. They must also insure against the building up of appreciable concentrations of butadiene peroxide in the atmosphere immediately surrounding the plant, or either the sudden or progressive building up of this material within the equipment system. An appreciable concentration of butadiene peroxide entails an explosion hazard of appreciable magnitude.

Prevention of spontaneous polymerization is accomplished by the addition of various anti-polymerization inhibitors which are dissolved in the butadiene and styrene in storage and are later removed before the reaction, as is described in another section. Another means employed to avoid premature polymerization is to maintain the storage temperatures of these materials at constant optimum values, depending on the characteristics of the inhibitors employed. A suitable type of cooling surface for this purpose is a removable U-tube bundle inserted in the storage vessel in which any type of coolant consistent with the cooling requirements can be applied. Since polymerization cannot be completely prevented, there will therefore be some progressive building-up of polymer films on the heat transfer surfaces. Their overall coefficients of heat transfer must, therefore, be taken quite conservatively to guard against frequent cleaning of the tube surfaces. It is desirable to employ non-copper-bearing alloy tubes, preferably having a high external finish to inhibit the formation of a corrosion

The leakage of significant amounts of butadiene at any point in the system would result in the hazard of butadiene peroxide accumulation. This can be avoided by piping all points where considerable leakage could take place, such as from relief valves, to a concentrated sulphuric acid trap. The reaction of butadiene with concentrated H_2SO_4 yields a variety of polymer products of nondescript character which do not constitute explosion hazards.

Normal carbon steel plate is used for the fabrication of the butadiene and styrene storage vessels, while glass-lined vessels are preferably used for

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A wide variety of materials has been used for the inhibiting of both butadiene and styrene. Generally, these are organic solids which are directly sol-

The distillation equipment for butadiene consists of a still at the bottom of a Raschig-ring-packed tower, connected by a line containing a constant back-pressure valve to the vapor space of the butadiene storage tank. The U-tube bundle in the storage tank is connected to sources of both low-pressure steam and a coolant, with a thermostatic control for maintaining the temperature of the storage vessel constant at some optimum storage temperature, generally about 50 deg. F. Vapor from the storage tank is led into the still and up through the packed column where it is washed with pure butadiene liquid reflux, returned by means of a pump from the butadiene receiver. The receiver is maintained at a lower temperature, such as 25 deg. F., to maintain a vapor pressure differential from the storage tank to the receiver (6.25 lb. per sq. in. in this case). Since a pure liquid will exert a constant vapor pressure at a constant temperature, the vapors issuing to the receiver are condensed. Butadiene is then led from the storage vessel

Fig. 1—Simplified flowchart of batch conditions plan for location of bottlenecks and stresses in Batch 1000



at 50 deg. F. and condensed in the receiver at 20 deg. F. The packed tower effects both a thermal separation of butadiene vapors from the inhibitor vapors, and a mechanical separation of entrained inhibitor. The inhibitor, dissolved in the butadiene reflux, is pumped back to the butadiene tank.

The distillation equipment, which is designed for batch operation on the basis of a 20-minute charging cycle, carries a much larger load under batch operation than during continuous operation. For batch operation approximately 81 g.p.m. of butadiene would be required and, with a 5 to 1 reflux ratio, this would amount to 2,080 cu.ft. per min. of vapors at the 50 deg. F. storage temperature. Condensation of the required butadiene in the receiver, with a latent heat of 188 B.t.u. per lb. of butadiene, would require approximately 5,500,000 B.t.u. per hr. of cooling capacity.

A somewhat similar system, which, however, must operate under vacuum, can be employed for the separation of soluble organic inhibitors from styrene, when these are of the negligibly low vapor pressure type. Since styrene polymerizes at moderate temperatures, it is desirable to conduct the distillation under high vacuum. Liquid styrene is conducted through a liquid-level operated valve (made responsive to a pre-set liquid level in the receiver) to a still equipped with a steam-heating coil and topped with a packed column which serves the same purpose as the butadiene column. The steam coil provides the heat necessary to vaporize the styrene feed. The vapors from the tower are condensed, part being refluxed as in the case of butadiene recovery, and part being cooled somewhat farther in a cooler to avoid the possibility of flashing of the condensed styrene from the styrene receiver owing to momentary upward fluctuations of the vacuum. A sub-cooling of the condensate of about 10 deg. F. should be adequate when a steam jet ejector is used for vacuum production. Under ideal conditions the distillation of the styrene should be carried out under a maximum temperature of 90 deg. F. and a vacuum of 29.2 in. Hg. By setting the receiver at an elevation of 36.7 ft. above the turbine pump used to feed the proportioning pump, the vacuum head on the pump can be overcome. Systems differing only in the details of construction of the still column may be used to separate other types of inhibitors from styrene.

Several types of proportioning equipment can be used for the simultaneous feeding and proportioning of the inhibitor-free butadiene and sty-

rene, the soap solution, chain modifier and treated water. The type indicated in the flowchart is that made by Proportioners, Inc., with the treated water flow serving as the metered component. In the set-up illustrated, the several proportioning pumps are metered by compressed air under the influence of a pilot valve mechanism, attached to the treated water meter. By adjusting the rate of treated water feed, the rate of feed of all other ingredients is automatically adjusted.

Since only the catalyst proportioner is capable of drawing its own feed and building the pressure up to that required for discharge, the styrene, butadiene and soap solution proportioning units are provided with turbine type pumps preceding the proportioning pump. To provide for adjustment of the various feed rates, the turbine pumps are equipped with bypasses from the discharge back to the suction. The metered discharge from each proportioning unit is sent to a common header and thence to a surge tank. The surge tank is provided primarily to bring the butadiene vapor into equilibrium with the liquid phase and so to prevent gas binding of the lines or the butadiene pump or meter. It has a further effect of producing a partial homogenization of the proportioned stream, especially in the check valve at its exit. This latter valve is provided to prevent butadiene from flashing back through the system in the event of feed stoppage.

PRE-HOMOGENIZING

Owing to the heterogeneous nature of the reaction mixture, it is necessary to pre-homogenize the proportioned stream leaving the feeding system if uniformity of the formulation is to be assured. This is all the more

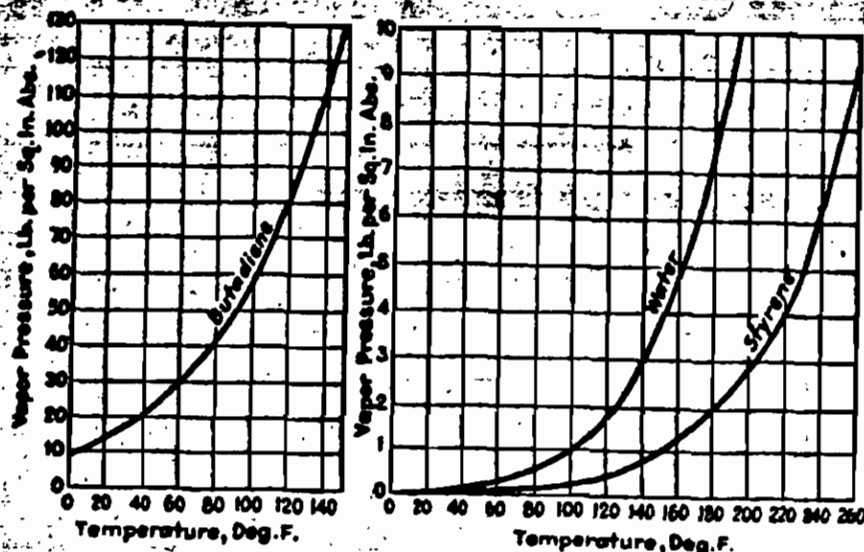
necessary owing to the fact that the proportioning pumps deliver material in "slugs." An orifice plate manifold is suitable for pre-homogenization.

Any heterogeneous system can come to a desired degree of dispersion only by putting external work into the system. The work required to attain the desired degree of emulsification in the mixture used for the reaction under discussion can be determined rather easily in a small batch mixer and from this the necessary pressure drop across a suitable orifice manifold can be calculated. The total discharge area needed can be distributed among a suitable number of orifice plates, but it must be understood that the actual pressure drop across such a manifold may well exceed the arithmetic sum of the theoretical drops for each orifice, especially where turbulent flow obtains. As shown in the flowchart, in order to accommodate both batch and continuous operations, it is necessary to arrange to bypass a number of the orifice plates when the smaller feed rate of the continuous process is used. Furthermore, owing to the possibility of progressive accumulation of polymer in the orifices during homogenization, an auxiliary duplicate manifold must be provided for use while cleaning of the first manifold is being carried out.

The orifice type of pre-homogenizer has the advantage of being a continuous unit which is low in initial cost, yet has no disadvantages from the standpoint of efficiency. It should be noted that if the mean temperature of the homogenizer stream would impair the solubility of the soap in the mixture, the pre-homogenizer should follow the heat exchanger which precedes the reaction section.

To permit the maximum possible

Fig. 2—Vapor pressures of butadiene, styrene and water



reaction time in the polymerization vessels, a tubular heater is provided in the line from the pre-homogenizer to the reactor vessels proper. This heater relieves the latter of the burden of raising the material temperature to that required for reaction. Taking the temperatures of the butadiene and styrene as those established by the condensation equipment previously described, and the temperature of other materials as 55 deg. F. minimum, the blend temperature of the feed entering the heater will be approximately 54 deg. F. To increase the temperature of the mixture to the reaction temperature of 113 deg. F., under the conditions of batch operation, will require a heater having a service rating of 5,500,000 B.t.u. per hr. for a 30-min. charging cycle. With 100-lb. steam and a conservative heat transfer coefficient, an 827-sq.-ft. heater of the single pass, floating-head type will be adequate. To facilitate cleaning, the reaction mixture is handled on the tube side. Tubes and bonnets are of Type 304 stainless steel. A heater designed for batch operation will be much more than adequate for the lower hourly load rate imposed by continuous operation. To provide for automatic shifting of the heat exchanger from or to batch operation, the rate of the steam feed to the shell side is made responsive to the temperature of the effluent emulsion. This is done by using a standard flow controller of the throttling type.

REACTION SECTION

For batch operation of a plant of 7,500 long tons per year polymer-producing capacity, a battery of 20 agitated, jacketed autoclaves having a working capacity of 1,550 gal. each is adequate. In batch operation, five vessels are charged simultaneously every six hours. Thus 20 batches of latex are discharged every 24 hours. The operation cycle includes a 23-hour reaction period, with one-half hour each allowed for charging and discharging of the reactors.

For continuous operation the 20 reactors are connected by an alternative piping arrangement into four tandems of five vessels each.

The considerations determining the size of the autoclaves comprising the reaction section are: (1) the batch capacity required of the plant; and (2) the heat exchange surface requirements of the reaction. The arrangement of the autoclaves for continuous throughput involves the reconciling of three basic factors: (1) accomplishing a certain maximum completion of reaction of the effluent; (2) restricting the mean square deviation from the mean

holding time in the reactor equipment within desirable limits; and (3) achieving a maximum throughput capacity.

Without going into too much detail regarding the principles of continuous reactor design, we may state concerning these factors that: (1) proper determination of the rate of throughput through either one or a series of vessels makes it entirely possible to attain any desired completion of reaction; and (2) the mean square deviation from the mean holding time which is thus established for the various portions of the effluent, however, need not be optimum for the reaction at hand. A major consideration where polymer chemistry and certain instances of organic synthesis are concerned is the possibility that any given arrangement of vessels may permit a holding time for some portions of the throughput which would allow side reactions or the building up of polymers of undesirable chain length. (A treatise by the authors and E. Z. Barish, reducing to practical application the mathematical investigations into continuous reactor design developed by the senior author of this paper, is in preparation for early publication. The forthcoming paper will set forth the background and reasons for the greater efficiencies obtainable with continuous as compared with batch operation.—Editor.)

The reactors proper are similar in design to typical resin autoclaves, such as those described in the authors' previous paper on resin plant design (*Chem. & Met.*, Dec. 1941, p. 73). Agitation is provided by turbine or propeller mixer units. Stuffing boxes are of the hydraulically balanced, double-lantern-ring type to provide especially efficient sealing against butadiene leakage. In a unit of this size approximately 7 hp. is required for agitation, exclusive of frictional dissipation of power in the drive and stuffing box assembly. This rate of work input is necessary, first to provide the required conditions of forced convection on the batch side of the heat transfer surface; and second, to re-establish the emulsion continuously against its tendency to break under constantly changing conditions of chemical composition during the reaction period.

Stainless or stainless-clad steel, glass-lined steel, or chromium-plated steel are recommended materials of construction for the vessel members. Agitator parts can be of Type 304 stainless steel. The high surface finish available with glass-lined and chromium-plated steel are advantageous in offering a surface which tends to resist the deposition of a tenacious polymer film. Both steam

and cooling feeds are provided for each jacket, the feeds being automatically controlled. The main heat load is in the removal of the exothermic heat of polymerization. In continuous operation, the effluent stream from each reactor is fed into the immediately next vessel of the mixing train proper. Although the reactors are subject at a temperature of 113 deg. F. to a total vapor pressure of approximately 73 in. Hg., absolute, they are designed for a working pressure range from full vacuum to 150 lb. per sq. in. gage.

BATCH RECOVERY OPERATIONS

After the desired completion of the reaction is attained, it is necessary to remove and recover from the latex product the 9 percent or so of unreacted butadiene and styrene. It is possible to recover only a part of the unreacted material although substantially all of it can be removed from the latex. About 90 percent of the unreacted butadiene is recoverable and somewhat more of the styrene. To permit satisfactory operation under the worst conditions, the recovery system shown was actually designed to handle the amount of butadiene and styrene which would be unreacted, assuming only a 75 percent completion of the reaction.

In batch operation, each group of four reactors is provided with a single blowdown still or tank of 5,000 gal. capacity, identical in basic construction with the reactors, except that each is provided with a steam distillation coil. Each blowdown still is designed to operate over a pressure range from full vacuum to 150 lb. per sq. in. gage internal positive pressure. Each blowdown vessel receives a charge every six hours from one of the four reactors with which it works.

The equipment for recovery of unreacted butadiene is somewhat similar in its operation to the butadiene distillation equipment previously described. The differences derive from the fact that in this case the flow potential between the still and the receiver varies from the beginning of the operation to the end; and because in this case rubber polymer emulsion particles contaminate the vapor.

The changing flow potential between the blowdown still where the butadiene is being distilled off, and the butadiene recovery or storage vessel, where it is being condensed, can be considered as arising from the following conditions. For all computational and practical purposes, the system which is being subjected to distillation can be considered as a three-component system of water,

butadiene and styrene, in two phases, with water as one phase, and a miscible mixture of butadiene and styrene as the other phase. Initially the vapor pressures of styrene and water are negligible in comparison with the vapor pressure exerted by the butadiene at the initial distillation temperature. The mol fraction of butadiene in the butadiene-styrene system is high, roughly 80 percent. As the mol fraction of butadiene falls, however, its partial pressure also falls, since the still temperature is kept constant during the butadiene distillation. To provide the necessary driving force as the butadiene distillation approaches its end, as well as to prevent excessive boiling and frothing during the early stage of distillation, a Nash Hytor type of compressor, acting as a vapor meter and as a butadiene exhaustor, is inserted in the line between the still and the condenser. Initially, the compressor serves primarily as a vapor meter, but as the pressure in the blowdown still falls, it provides the necessary flow potential to continue the distillation. A valve on the line leading to the recovery vessel, the thermostatically controlled constant still temperature and an arrangement for bypassing from the discharge of the compressor to its intake, provide for adjustment in the rate of butadiene distillation. A compressor of 113 cu.ft. per min. capacity, capable of delivering at a pressure differential of 25 lb. per sq.in., is able to handle the joint load of five blowdown vessels. The blowdown vessels are exhausted to a total vapor pressure of 15 lb. per sq.in. absolute, any exhaustion beyond this resulting, of course, in a carryover of appreciable quantities of water and styrene to the recovery vessel.

In order to prevent carryover of entrained polymer emulsion particles in the butadiene recovery system, two vapor scrubbing units are provided through which the butadiene vapors pass. In the first, the vapors are scrubbed by a spray of a weak solution of acetic acid which exerts a demulsifying action on the polymer emulsion particles, throwing out the rubber particles on the surface of the acid bath. In the second scrubber, the entrained acid vapors are washed out with water. The rubber particles which are thrown down are separated from the recirculated acid by means of traps in the recirculation lines.

After the butadiene has been distilled off, it is necessary to remove and recover so far as possible the unreacted styrene. This is accomplished by the progressive drawing of a high vacuum on the still, allowing the sensible heat of the latex batch to provide

the latent heat for distilling the styrene. This operation involves two rather sharply defined stages. In the first stage, mainly the residual butadiene remaining in solution in the styrene and in the rubber polymer is exhausted in dropping from a total vapor pressure of 15 lb. per sq.in. absolute to about 2 lb. per sq. in. absolute. In the second stage the vessel is exhausted from 2 lb. per sq.in. absolute to about 1.6 lb. per sq.in. absolute, and during this period both water and styrene are flashed off. Since the water and styrene form an immiscible system, the relative magnitudes of their vapor pressures do not change as a function of the altering composition of the system, but rather as the temperature of the latex in the stills changes. Approximately a 10 deg. F. drop in temperature of the latex emulsion occurs during driving off of the styrene because of the conversion of sensible heat to latent heat which the evacuation of the stills effects. The driving off of the main part of the unreacted styrene is followed by a steam distillation at 29 in. Hg which is used to disengage mechanically entrapped styrene. The condenser and liquid cooler employed in the recovery system have the same function as the corresponding items described in the styrene distillation system, described above for inhibitor removal.

The problem of scrubbing entrained latex from the styrene-water vapor mixture is dealt with by scrubbing these vapors with a brine spray which "salts out" the stabilizing colloid for the latex (soap) and throws down the polymer particles which are then collected in pump traps in the brine recirculation line. Water scrubbing to remove the entrained saline spray follows. A vertical separating column is employed for the separation of the styrene from the water condensed with it, with which it is immiscible.

CONTINUOUS RECOVERY OPERATIONS

When the process is operated on the continuous basis, all five blowdown tanks are not necessary, three being sufficient to handle continuous distillation of butadiene and styrene. This makes it possible in continuous operation to use two of the blowdown vessels as additional polymerization autoclaves. This fact and the greater efficiency in continuous reacting, contribute to the approximately 40 percent additional capacity for continuous as compared with batch operation.

When the removal system is operated continuously, a constant back pressure valve between the last reactor and the continuous butadiene still prevents butadiene from flashing through

the system. The continuous butadiene still is maintained at 113 deg. F. continuously. In this case the compressor in series with the butadiene recovery system maintains a constant still pressure of 15 lb. per sq.in. absolute. The stream of latex which has been freed almost completely from butadiene is continuously withdrawn to the continuous styrene and water still under control of a flow controller inserted between the two stills and made responsive to the liquid level in the continuous butadiene still. The steam jet ejector in the styrene flash still circuit maintains a vacuum of 28.4 in. Hg (0.835 lb. per sq. in. absolute), thus giving a pressure differential of $15 - 0.835 = 14.165$ lb. per sq.in. between the two stills, while at the same time it effects the continuous flashing of the styrene-water distillate. In both the continuous butadiene still and the styrene flash still the entering streams are poured from a convenient point on to the surfaces of the liquid phases in the respective stills. Flow from the styrene flash still to the steam still in which the latex is freed of mechanically entrapped styrene is accomplished under a slight difference in pressure level, aided by a gravity head. Again control is by a flow controller made responsive to the liquid level in the styrene flash still. A double receiver assembly in which the lower of the two receivers pulsates in cycles from atmospheric to 29 in. Hg vacuum is employed as a means for discharging the styrene- and butadiene-free latex.

Because of the heat exchange surface that is available in the continuous butadiene still, and because the distillation in the styrene still is effected by flashing, the intensities of frothing and foam entrainment which might be encountered under certain circumstances are the only limitations on the rate of distillation. The ability to select arbitrarily the liquid level which is carried in these stills makes it possible to counter any tendency toward excessive foam entrainment. The frothing problem is rendered less acute than in batch operation owing to the fact that the distillates in both stills are flashed from the incoming streams during their fall to the liquid surface, as well as from the surface of the liquid in the still. On the other hand, in batch operation, much of the evaporation of distillate takes place within the body of liquid in the still, increasing the tendency toward frothing and entrainment as the bubbles break at the liquid surface. Finally, continuous processing with its resultant practically continuous stream of latex simplifies the handling load for successive stages of the process.

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Design of a Urea Resin Plant

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Chem. & Met. INTERPRETATION

Rational design of chemical process reaction equipment demands careful attention to many details of both the process and the equipment itself. Among these are questions of the best material, its strength and working properties, heat release and heat transfer, and many other factors. An interesting discussion of the designer's methods in designing the reaction equipment for an actual urea resin plant appears in the accompanying article. Particular attention is drawn to some of the ingenious details that have been developed to avoid trouble with common parts such as stuffing boxes and submerged guide bearings.—Editors

DESIGN of a urea resin plant, as well as plants for most other resins, covers three main parts: the resin kettle, the refluxing equipment, and the dehydration equipment. These three main equipment groups, in the order mentioned, correspond to the main unit operations employed in producing the resin: chemical condensation of the reactants; refluxing for completing the reaction and removing the heat of reaction to maintain a constant reaction temperature; and final removal of process water to dehydrate the resin to the desired level of dryness.

A typical instance of design was the case of a 500-gal. urea resin plant constructed by the writers' company for the manufacture of resin for making plywood. Among design considerations in the kettle proper, the most critical aspects were the selection of a suitable material of construction, provision of an agitator assembly of satisfactory mechanical and functional design, and construction of the vessel to withstand the temperature and pressure conditions of operation.

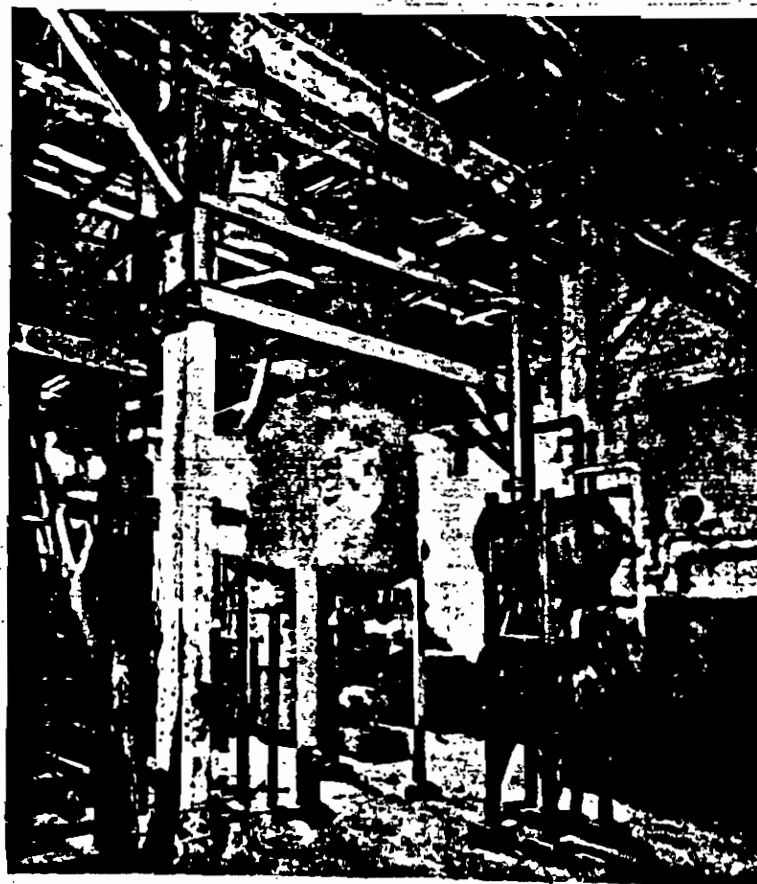
Tests and actual installations have shown nickel to be the metal best suited for urea resin autoclaves. In this particular case 20 percent nickel-steel was used for the inner shell members, with all other parts in contact with the batch or the vapors made of pure nickel.

A horseshoe type agitator was selected since the reaction mass tends to increase in viscosity toward the

end of the process, approaching a consistency well beyond that for efficient performance of high-speed mixing equipment. With a horseshoe

agitator a tip speed of about 500 ft. per min. is most efficient, and with 1-in. clearance in the vessel shown in Figs. 1 and 2, this called for a rotational speed of 41 r.p.m. The agitator, it will be noted, was of bolted construction to permit disassembly for overhauling or repairs and removal through the vessel manhole. An agitator with the blades as shown in Fig. 2, operating at 41 r.p.m., will absorb about 7 hp. when the reaction mass attains its maximum consistency. The maximum frictional loss of power in the stuffing box will approach 0.5 hp. (see article on Stuffing Boxes, A. Brothman, *Product Engineering*, Sept. and Nov. 1940). Therefore, the total estimated brake load on the agitator drive of 7.5 hp. will produce a torsional moment in the agitator shaft of 74.5

Fig. 1—This is the urea resin plant, built for a plywood resin manufacturer, showing the detailed design steps of which the authors describe here.



63,025) 41 = 11,400 in. lb. The diameter of shafting required to transmit this torque load, according to the computation method described in an earlier article (Vertical Shaft Design, A. Brothman, *Product Engineering*, April 1949) is found to be 2.48 in. when the stress at the yield point of nickel is taken as 35,000 lb. per sq. in. and the stress at the endurance limit as 30,000 lb. per sq. in.

If a torsional deflection of 1 deg. per 20 diameters of shafting is permitted, the shaft diameter required to transmit the load without undue torsional vibration of the shaft at shock loading is found to be 2.56 in. according to the calculation method described in the above mentioned article. In this case the modulus of elasticity in shear of nickel is taken as 12,000,000 lb. per sq. in. Because of the low agitator speed, the stiffening influence of the agitator cross-brace, and the use of a bottom guide bearing, bending stresses in the shaft can be considered negligible. Considering the efficiency of transmission of the right-angle gear-head motor drive, a drive with a nominal rating of 10 hp. was selected.

The motor drive was rated at a

thrust load capacity in either direction of about 6,000 lb. Investigating the thrust load imposed during operation, it was found that under full vacuum operation the thrust load would equal the weight of the agitator, shaft and coupling (371 lb. total) plus the thrust of the atmosphere on the cross section of the 2 11/16 in. diameter shaft or a total of 455.8 lb. With the vessel operating under a maximum positive internal pressure of 60 lb. per sq. in., the downward thrust would be 371 lb. less the pressure of 60 lb. against each square inch of the shaft cross-sectional area, or 41 lb. The drive thrust capacity is therefore more than ample.

Stuffing boxes and agitator shaft bottom guides are often troublesome problems. It is therefore worthwhile to go into the designs selected for these parts, as detailed in Figs. 3 and 4. The bottom guide members should be constructed of materials having corrosion-resistant properties similar to those of the other materials contacting the vessel members and incapable of forming a galvanic couple with other vessel members. The contacting parts should have a difference in hardness of at least

100-150 Brinell points to avoid galling or seizing and a clearance between contacting parts consistent with the lubricating properties of the reaction materials. To satisfy these conditions "Z" nickel was used for the sleeve which was press-fitted on to the bottom of the agitator shaft, and this sleeve was run in contact with a cold-drawn nickel guide bushing clearing the sleeve by 0.008 in. ("Z" nickel is a heat treatable nickel alloy containing 98.5 percent nickel, having corrosion resistant properties under the conditions of use similar to those of "A" nickel.) The sleeve was machined from a cold-drawn bar, then heat treated to about 380 Brinell and ground internally and externally to final dimensions. A cold-drawn "A" nickel bushing, press-fitted into a cast nickel housing, was used as the bottom guide member proper. Such a guide is easy to repair by replacement of the bushing.

Problems in the design of a stuffing box for an application of this type include necessity for choosing a packing material incapable of scoring the agitator shaft, and need for reducing the guiding function of the packing on the shaft to an absolute minimum. An asbestos-lubricant-impregnated packing combination was used and a guide bushing was provided in close proximity to the packing. If this bushing had been placed in the floor of the box proper, adequate lubrication would have been difficult and lubricant might have been drawn into the vessel under vacuum. Therefore the bushing was placed in the gland. To prevent the possibility of uneven adjustment of the gland and cramping of the bushing, the gland was fitted closely to the bore of the box while the holes in the gland flange were reamed to the bronze box studs. The S.A.E. No. 64 bronze gland bushing was fitted for continuous lubrication. The gland proper was made of mild steel to avoid galling between the gland and the bronze studs of the box.

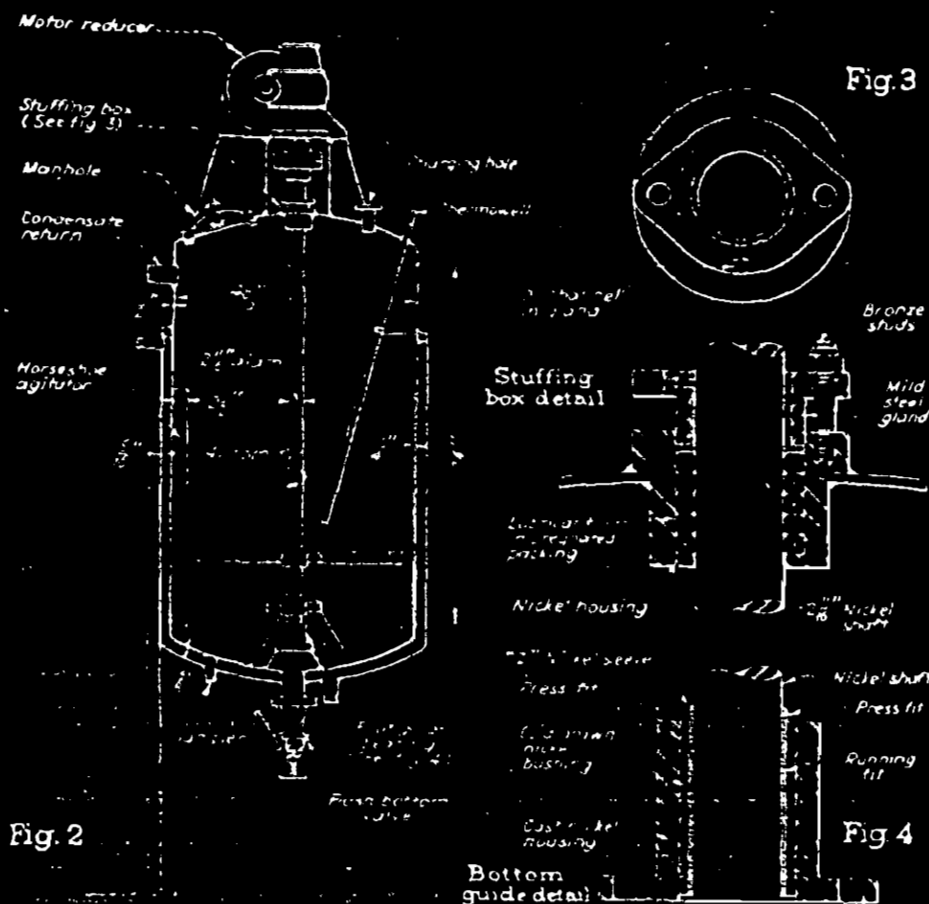
The design of the vessel itself was intended to promote good mixing both for the initial batch volume and for the reduced volume during dehydration. It was necessary to insure a maximum area of jacketed surface in contact with the batch at all times and also to design and fabricate the vessel in accordance with A.S.M.E. Unfired Pressure Vessel Code requirements.

Four considerations usually determine the design of a surface container to be used in a typical resin

Fig. 3—Both bottle cross section showing jacket and agitator design

Fig. 4—Stuffing box detail showing method of guiding shaft with gland bushing

Fig. 5—Agitator shaft bottom guide bearing with replaceable wearing surfaces



plant. The first of these is the heat of reaction of the process. When refluxing is used as a means of controlling the temperature, all of this heat must be taken out by the condenser. The second factor is whether the reaction mass is to be cooled after completion of the reaction by flashing of water vapor under vacuum. This method is desirable in producing some kinds of resins, for example, urea resins, in avoiding high temperatures for prolonged periods of time which, if not sharply controlled, would convert the resin from one stage of its development to another. The third consideration is the amount of jacketed space remaining in contact with the batch during dehydration, coupled with the steam temperature used in the vessel jacket and the degree of vacuum maintained. The final question is the limiting rate of steam release from the reaction mixture which can take place without excessive foaming resulting in fouling of the condenser surfaces.

In the particular plant here referred to, the process was expected to produce a heat of reaction of 100 B.t.u. per hr. per pound of reaction mass. In order to remove this by refluxing, $500 \times 8 \times 160 = 400,000$ B.t.u. per hr. would have to be removed by the condenser. With cooling water at 75 deg. F. and a 10 deg. F. cooling water temperature rise, the log mean temperature potential across the condenser tubes would be 135 deg. F. Using a safe value for the overall heat transfer coefficient of 300 B.t.u. per hour, sq.ft. and deg. F., the amount of cooling surface for refluxing would be $400,000 / (300 \times 135) = 9.88$ sq.ft.

Immediately after refluxing, the process to be used called for dropping the batch temperature in a period of not over one hour from 212 deg. F. to 95 deg. F. We decided to do this by flashing some of the batch water by subjecting the reaction mass to vacuum and thus converting sensible to latent heat. With a batch of 500 gal. at 8 lb. per gal. and a specific heat of the reaction mass of about 0.6, the amount of heat that would have to be removed would amount to $4,000 \times 0.6 \times (212 - 95) = 281,000$ B.t.u. per hour. The condenser surface required to remove this amount of heat would be small and would obviously come well within that required for the main dehydration problem, as is shown in a later section.

After cooling the batch, the process required its dehydration at a tem-

perature of 95 deg. F. (corresponding to a vacuum of 29.5 in. Hg). Condenser requirements were calculated as follows: Considering the reduction in volume accompanying flashing of the batch water, there would remain a contact surface between the vessel jacket and the batch of about 72 sq.ft. With a safe value of 34 B.t.u. per hour, sq.ft. and deg. F. assumed for the overall heat transfer coefficient from the jacket, at 60 lb. ga. steam pressure in the jacket, the maximum heat input from steam to reaction mass would be $34 \times (292.7 - 95) \times 72 = 470,000$ B.t.u. per hour. Removing this heat as a condenser employing cooling water at 75 deg. F. and a 10 deg. temperature rise, with vapor from the kettle at 95 deg. F., would give a log mean temperature difference of

14.5 deg. F. across the condenser tubes. With a condenser heat transmission coefficient of 300 B.t.u. per hour, sq.ft. and deg. F., the required condensing area for the maximum load of water vapor would be $470,000 / (300 \times 14.5) = 108$ sq.ft. of condenser surface area.

To determine the amount of non-condensable gases it is necessary to arrive at an estimate of the amount of these gases passing through the condenser per minute. A general rule which may safely be applied to all urea-resin (as well as phenolic-resin) installations is that the amount of non-condensable gases entering the condenser per minute is equal to the vacuum pump displacement per minute which would be required to evacuate the entire vapor space of the

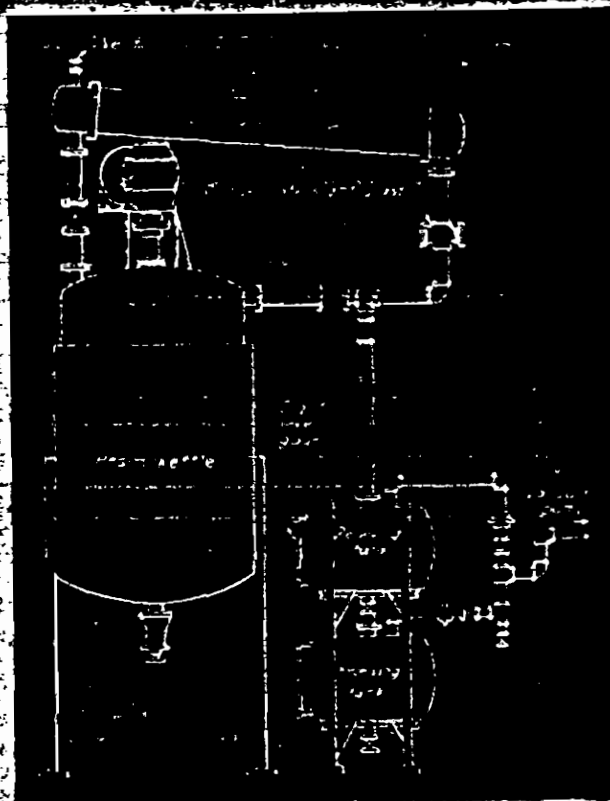


Fig. 1. Top—Sketch of condenser and jacketing for dehydration and dehydration. Fig. 2. Above—Assembly of main batch condenser and associated equipment, showing method of piping to accommodate the various phases of the process.

system, from atmospheric to the pressure being maintained, in a period of five minutes. In the installation under consideration the total vapor space is approximately 50.8 cu ft. Considering the progressive expansion of the gas accompanying exhausting from atmospheric pressure to 28.5 in. Hg, the integrated expression $\int \log P/P$ applies. Here the total volume is found to be $50.8 \times 2.3 \times \log_{10} (15.0/0.814) = 187.5$ cu ft., or 29.5 cu ft. of non-condensable gas per minute referred to the pump intake conditions.

For all practical purposes, the total pressure of condensable plus non-condensable gases at the condenser inlet equals the absolute pressure of steam at 28.5 in. Hg vacuum, or 0.814 lb. per sq. in. abs. Assuming as design specifications for the condenser a 0.1 lb. per sq. in. pressure drop and a 7 deg. F. temperature drop for the non-condensable gases, the total pressure at the condenser outlet would be 0.814-0.1 or 0.714 lb. abs., while the partial pressure of the steam at the outlet (corresponding to a saturation temperature of 88 deg. F.) would be 0.654 lb. abs. and the partial pressure of the non-condensable gases, $0.714-0.654 = 0.06$ lb. per sq. in. Assuming the non-condensable gases to have the molecular weight of air, their specific volume at the condenser outlet would be $(359/29) (14.7/0.06) (460+88)/460 = 3,610$ cu ft. per lb. Thus the weight of these gases entering the condenser

per hour would be $(29.5 \times 60)/3,610 = 0.49$ lb. per hr. With a cooling water temperature rise of 10 deg. from 75 deg. F., and gas cooling from 95 deg. to 88 deg. F., the log mean temperature difference would be 9 deg. F. Making the safe assumption that the non-condensable gases have the specific heat of air, or 0.2374, and using the safe figure of 0.01 for the coefficient of heat transfer from the non-condensable gases in the tubes to the cooling water, then the extra condenser surface needed for these gases would be $(0.49 \times 0.2374 \times 7)/(0.01 \times 9) = 9$ sq. ft. Therefore, the total cooling area required equals $108+9 = 117$ sq. ft. of tube area.

The fourth consideration of condenser design mentioned above, namely limiting the maximum rate of vapor evolution to a degree which will avoid critical foaming, is not difficult to take care of in this case. From experience it was found that a rate of steaming of 500 lb. per hr. is the limiting condition. It is apparent that this high rate of steaming enters as a factor only during the flashing stage since neither the rate of evolution of the heat of reaction nor the available jacket heating surface during the last portion of the dehydration permit exceeding this critical figure. Control of the steaming rate during the flashing period was accomplished by selecting a proper size of kettle cover vapor nozzle and suitable connecting piping,

and by proper manipulation of the vacuum pump equipment.

The actual design decided upon for the combination reflux and dehydration condenser shown in Fig. 5 called for 120 nickel tubes of $\frac{1}{2}$ in. outside diameter, by 18 ga., expanded at both ends into nickel-clad tube sheets, the tubes being 7 ft. 6 in. long between the tube sheets. Construction is of the fixed-tube-sheet design with a slight bowing of the tubes allowed to take care of expansion. To facilitate cleaning in case of carry-over from the kettle, it was decided to handle the vapor on the tube side. Baffle members on the shell side not only support the tubes, but develop a spiral motion of the cooling water, giving a flow component normal to the tubes and making possible a relatively high water-film coefficient. The condenser bonnets were formed of 20 percent nickel-clad steel.

In completion of the installation, it was provided with equipment for the automatic control of temperature, pH and pressure. To facilitate operation a sampling device was provided to permit withdrawing samples at any time and under any condition of pressure. Two sight glasses in the cover were supplied, one equipped with a permanent lighting fixture, and also a sight-glass member interposed in the condensate leg of the condenser piping. Throughout, the construction emphasized simplicity yet without sacrifice of flexibility or ease of manipulation.

100-365042-32
RUFERT CHEMICAL COMPANY

CATALYST MANUFACTURERS



SEYMOUR BRIGHT NICKEL PROCESS

SEYMOUR, CONN.

CABLE ADDRESS "WYNGOL" NEW YORK

June 23, 1944

Local Board No. 245
43-01 46th Street
Long Island City, New York

JUN 21 1944

43-01 46th Street
Long Island City, N. Y.

Gentlemen:

On December 9th, 1943, we submitted a supplement to Mr. Brothman's application for occupational deferment, which we understand expires this week. May we take this opportunity of asking that he be continued to be deferred in 2-B, so that he may be given an opportunity to complete our plant, which is an extension of our present plant facilities as outlined in our letter of December 9, 1943.

Mr. Brothman is responsible for the design, supervision, and trial operation of the complete project when finished, and we hope that you will see fit to continue to defer him.

Thanking you for your continued cooperation, we are

Very truly yours,

THE RUFERT CHEMICAL COMPANY


Technical Director

MLP:OS

SELECTIVE SERVICE SYSTEM

Budget Bureau No. 12-50002
Approval Expires Dec. 31, 1943

AFFIDAVIT—OCCUPATIONAL CLASSIFICATION (Industrial)

(Affidavit—Occupational Classification (General), Form 42, provided
for use in activities where the items on this form are not applicable)

JUN 21 1944

Name of registrant Abraham Brothman1301 46th Street
Sunnyside, L. I. C. N. Y.Selective Service Order No. 52Age 30Local Board 245 Queens Long Island City New York
(Number) (County) (City) (State)Title of present job Engineer and Designer

State whether journeyman, apprentice, helper, certificated, licensed, professional engineer, etc.:

Professional EngineerEngaged as a consulting engineer and designing engineer.

Describe duties actually performed

He is capable of designing all types of equipment we manufacture, which includes process equipment, resin plants, acid making equipment, food process equipment, coal handling equipment, water treating equipment, sewage disposal equipment, clarifiers, pressure tanks of all kinds, oil refinery equipment, and welded steel products. Briefly, he has been for some months and still is working exclusively on special equipment to handle the manufacture of synthetic glues for military purposes, continuous fractional distillation of fatty acids for the production of high grade fatty acids for use in rubber compounding and metallic salts of fatty acids for use in paint and coating formulations, equipment for manufacture of pure nickel carbonate for the reduction of the carbonate to dry reduced catalyst for use in butadiene manufacture, and design of equipment for continuous operation of nickel nitrate-ultimate use the development of a nickel catalyst to beDate employed June, 1942Date entered present job used in the manufacture of aviation gasoline, and design of equipment for theAverage weekly rate of pay, \$ 125.00Average hours worked per week equipment for the

Prior work experience

Blaw-Knox, Pittsburg, Penna.Hendrick Manufacturing Company,Carbondale, Penna.Chemurgy Design Corporation, New York, N.Y.continuous methylation of waste fats to produce a dynamite grade of glycerine. He is capable of designing the necessary equipment and supervising the erection of and starting up the plantsEducational background John Winthrop Experimental School - Primary and part of secondary

(Fill out if necessary to establish employee's qualifications for a particular job) education

DeWitt-Clinton High School - Secondary educationColumbia College - Academic trainingColumbia University - Dept. of Chemical Engr. - Professional engineering training.How long will it take you to replace this employee? More than six months

What specific steps have you taken to secure or train a replacement for this registrant?

Our force of engineers would be materially be enlarged if qualified men could be found. We have exhausted all available sources of supply - including the U.S.

Employment Service.

D-S Form 42A
(Revised 9-13-42)

(OVER)

AFFIDAVIT OF OCCUPATIONAL CLASSIFICATION (Industrial)

Local Board No. 246
Continued County

JUN 21 1946

Name of company Graver Tank & Lfg. Co., Inc.
(Corporation, partnership, individual - if self-employed, so state)
Address of company 4809 Tod Avenue East Chicago, Indiana 111
(Location of plant, office, or division where registrant is employed)

Description of activities of this company Fabricators and erectors of welded steel structures, steel plate construction, water treating, process & sewage equipment, oil refinery equipment, softeners and filters, clarifying equipment, and general plate construction, steel, stainless steel, stainless clad, or other alloys. Manufacturing vessels and various articles of steel plate construction for the Navy Department, U. S. Maritime Commission, War Department, Synthetic Rubber Plants, and leading oil and chemical plants. Fabricators of heavy welded steel structures for machine tool builders and for marine and diesel engine builders, parts for shell loading plants, turret shields, gun-mounts, slides, carriages, etc.

State specifically what proportion of your products currently produced are:
(a) for use in the war effort 100%
(b) for civilian use _____

Is expansion or further conversion contemplated in war production? _____

Number employees now _____	Number additional needed in next 6 months _____	Number additional needed in next year _____
Explain _____		

Is a replacement training program in operation? _____ Contemplated _____
Explain _____

This form was completed at the plant or office of the company located at _____
4809 Tod Avenue East Chicago, Indiana
and all correspondence relative to this affidavit should be so addressed.

I, G. V. LeBlond, do solemnly swear (or affirm) that I am Vice-President of the above-named company, and that the foregoing statements are true to the best of my knowledge and belief.
(Official position)

Subscribed and sworn to before me this 17th day of June, 1946

Charles L. Miller
(Signature of official administering oath)

Notary Public

(Official designation of official administering oath)
My Commission Expires August 5, 1946

INSTRUCTIONS: This form is to be filled out by an employer or other person who has knowledge of the registrant's eligibility for Class II deferment as a necessary man in his civilian occupation or activity. If the registrant is deferred, the employer must notify the Local Board promptly of any change in the registrant's job status, or if his employment is terminated.

A. BROTHMAN & ASSOCIATES

Chemical and Mechanical Engineers

114 EAST 92nd STREET

NEW YORK 16, N. Y.

Local Board No. 245
Queens County

APR 11 1945
20-97 Broadway Street
Long Island City, N. Y.

April 10, 1945

Selective Service Local Board #245

43 - 01.45 Street

Long Island City, New York

Attention: Mr. Dahneke

Gentlemen:

In accordance with our telephone conversation today, this is to advise you that my notice to appear for a physical examination, which you asked me to return to your Board, has been misplaced and I am unable to locate it.

It is my understanding that my classification of 2B, dated April 2, Order #52 negates the necessity for my appearing at the physical examination, and that this letter will serve the same purposes as the returned notice of physical examination.

Thank you for your past courtesies.

Very truly yours,

A. BROTHMAN & ASSOCIATES

A. Brothman

A. BROTHMAN
Chief Engineer

A. BROTHMAN & ASSOCIATES

Chemical and Mechanical Engineers

114 EAST 32nd STREET

NEW YORK 16, N. Y.

Local Board #245
Queens County
APR 8, 1945
23
081
245

Selective Service Local Board #245
Queens County #081
30-97 Steinway Street
Long Island City, New York

APR - 9 1945
30-97 Steinway Street
Long Island City, N. Y.

Gentlemen:

We wish to enter the following appeal on behalf of Mr. Abraham Brothman, Order #52 with your Board.

Mr. Brothman is the head of our organization, in the capacity of Chief Engineer. He supervises all design work, research and field construction work.

We are consulting engineers to Bridgeport Brass Co. of Bridgeport, Conn., Graver Tank & Mfg. Co., Inc. of East Chicago, Indiana, Palestine Potash, Ltd. of Jerusalem, Palestine and New York City and the Commission on Aeronautical Affairs of the Republic of China.

Our work in connection with the Bridgeport Brass Co. covers all of the chemical and metallurgical operations of that company. We are especially associated at the present time, in the design and construction of a plant for the filling of aerosol bombs. The aerosol bomb is used by the United States Navy under contract #MXS-45488. These bombs are used wherever our armed forces enter disease-ridden and insect-ridden areas, as a preventative measure against the spread of insect-borne diseases. Our functions in regard to the aerosol container include the design of testing equipment, filling equipment, the layout of fabricating equipment for the aerosol bomb proper, and such stress analyses and chemical content reports as are required, both by the Bridgeport Brass Co. and by the United States Navy, from time to time.

Our work in connection with the Graver Tank & Mfg. Co., Inc. concerns the mechanical and process engineering for the water treating, waste disposal, process equipment and process plant projects which that company enters into. The Graver company is currently installing equipment of these types for the U.S. Army, the U.S. Navy, the U.S. Maritime Commission, and the leading chemical and oil refineries in the country. Mr. Brothman is the inventor of the Graver Mixer-Reactor, the inventor and designer of DDT plants which the Graver company builds and installs, and is also the inventor of the Graver Strip-Coat Melter and Dipping Device, which pieces of equipment Graver has installed and is manufacturing for General Motors, Truck and Airplane Parts Division, Ordnance Plant. The Graver Melter and Dipping Device is used for the coating of spare parts during travel to the various points where they are needed.

Selective Service Local Board #245 - 4/3/45

Our work in connection with the Palestine Potash, Ltd, includes the construction now of a 10,000 lb. per month DDT insecticide powder plant in the Near East. The insecticide powder produced by this plant will be used in disease control by combatting disease-carrying insects.

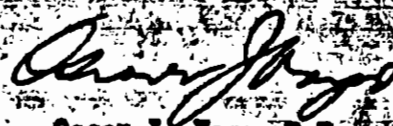
Our work in connection with the Commission on Aeronautical Affairs of the Republic of China includes a project now in process for the design of the raw materials plants, the resin plants, and the final forms preparation plants for the production of ply-wood glues and bomber noses, turrets and domes. This work is being carried out with the approval of the United States Lend Lease authorities to provide China with the means of building the airplane equipment it so badly needs in the war against Japan.

Mr. Brothman is recognized as the leading authority in the design of process plants and special mechanical equipment. He is the inventor of the field filling machine used by the Armed Forces in refilling aerosol bombs, and the automatic and semi-automatic devices which are now being built for the filling of aerosol bombs at the prime point of manufacture in this country. His induction into the Service would completely incapacitate our organization in carrying out its contractual obligations which it now has with the above concerns.

We are therefore appealing your decision in regard to his status and urge that we may be favored with his deferment.

Very truly yours,

A. BROTHMAN & ASSOCIATES



Oscar J. Vago, P.E.
Chief, Structural Division

ajv:m

A. BROTHMAN & ASSOCIATES

Chemical and Mechanical Engineers

114 EAST 32nd STREET

NEW YORK 16, N. Y.

March 30, 1945

Selective Service Local Board #245

Queens County 081

30-97 Steinway Street

Long Island City, New York

Gentlemen:

The writer, Order #52 with your Board, respectfully requests a hearing with regard to my recent classification in 1-A, dated March 21, 1945.

It is my intention, and the intention of the various firms for which I am now doing work, to place an appeal of the above classification with you. Within the next few days the firms which I mentioned will file letters of appeal regarding my status.

Very truly yours,

Abraham Brothman

Abraham Brothman

P.S. This letter confirms my verbal request for such a hearing placed with your Board March 22, 1945 by telephone.

ab:mm

REGISTERED:

RETURN RECEIPT REQUESTED

Henry 5/3/45

Bridgeport

BRIDGEPORT BRASS COMPANY

BRIDGEPORT 2, Conn.

AKRON OHIO
ATLANTA GA
BOSTON MASS
CHICAGO ILL
CINCINNATI OHIO
CLEVELAND OHIO
DENVER COLO
DETROIT MICH
GRAND RAPIDS MICH
HOUSTON TEXAS
LOS ANGELES CAL

March 27, 1945 Local Board No. 245
Queens County

MAR 28 1945

80-07 Steinway Street
Long Island City, S. N. Y.

NEWARK N. J.
NEW YORK N. Y.
PHILADELPHIA PA
PITTSBURGH PA
PROVIDENCE R. I.
RICHMOND VA
ST. LOUIS MO
SAN FRANCISCO CAL
SEATTLE WASH
WASHINGTON D. C.

Chairman
Local Board #245
Long Island City, N. Y.

Dear Sir:

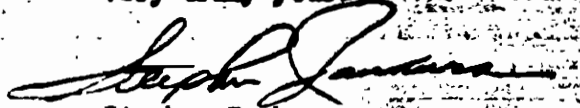
Re: A. Brothman - #52

We are advised that Abe Brothman, order number 52, has been classified by your Board in 1A.

Mr. Brothman, who is doing business as A. Brothman, Associates, has been engaged for the past nine months by our Company as a consulting chemical engineer in the manufacture of Aerosol dispensers for the Navy Department to be used by our armed forces in the South Pacific. The Aerosol dispenser is filled with a special chemical which is used to kill insects in the jungles for prevention of tropical diseases among the troops. This product carries a high priority with our Company.

Due to the high priority of the manufacture of Aerosol dispensers we are appealing to your Board to defer the induction of the above captioned registrant to a future date.

Very truly yours,


Stephen Jankura
Industrial Relations Department

SJ/mb

SELECTIVE SERVICE SYSTEM

AFFIDAVIT—OCCUPATIONAL CLASSIFICATION (Industrial)

(Affidavit—Occupational Classification (General), Form 42, is provided for use in activities where the items on this form are not applicable)

Budget Bureau No. 88-2002-10
Approval expires Feb. 21, 1943.

Name of registrant Abraham Brothman

Selective Service Order No. 52

Age 31

Local Board 245

Queens

Long Island City

New York

Title of present job Engineer and Designer

State whether journeyman, apprentice, helper, certificated, licensed, professional engineer, etc.:

Professional Engineer

Engaged as a consulting and design engineer. He is capable of designing all types of equipment we manufacture, which includes process equipment, resin plants, acid making equipment, food process equipment, coal handling equipment, water treating equipment, sewage disposal equipment, clarifiers, pressure tanks of all kinds, oil refinery equipment, and welded steel products. He has been working exclusively on

Describe duties actually performed: (If specific include name of machine or machine tool, process, materials, etc.)
special equipment to handle the manufacture of synthetic glues for military purposes, continuous fractional distillation of fatty acids for the production of high grade fatty acids for use in rubber compounding and metallic salts of fatty acids for use in paint and coating formulations, equipment for manufacture of pure nickel carbonate for the reduction of the carbonate to dry reduced catalyst for use in butadiene manufacture, and design of equipment for continuous operation of nickel nitrate-ultimate use the development of a nickel catalyst to be used in the manufacture of aviation gasoline, and design of equipment for the continuous methylation of waste fats to produce a dynamite grade of glycerine. He is capable of designing the necessary equipment and supervising the erection of and starting up of the plants.

Date employed June, 1942

Date entered present job June, 1942

Average weekly rate of pay, \$125.00

Average hours worked per week 40

Prior work experience Blaw-Knox, Pittsburg, Penna.

Hendrick Manufacturing Company, Carbondale, Penna.

Chemurgy Design Corporation, New York, N.Y.

Educational background John Winthrop Experimental School - Primary and part of secondary education
(Fill out if necessary to establish employee's qualifications for a particular job)

DeWitt-Clinton High School - Secondary education

Columbia College - Academic training

Columbia University - Dept. of Chemical Eng. - Professional engr. training.

How long will it take you to replace this employee? More than six months.

What specific steps have you taken to secure or train a replacement for this registrant?

AFFIDAVIT—OCCUPATIONAL CLASSIFICATION (Industrial)—Continued

Name of company Graver Tank & Mfg. Co., Inc.

(Corporation, partnership, individual—if self-employed, so state)

Address of company 4609 Tod Avenue East Chicago, Indiana

(Location of plant, office, or division where registrant is employed)

Description of the activities of this company Fabricators and erectors of welded steel structures, steel plate construction, water treating, process & sewage equipment, oil refinery equipment, softeners and filters, clarifying equipment, and general plate construction, steel, stainless steel, stainless clad, or other alloys. Manufacturing vessels and various articles of steel plate construction for the Navy Department, U. S. Maritime Commission, War Department, Synthetic Rubber Plants, and loading oil and chemical plants. Fabricators of heavy welded steel structures for machine tool builders and for marine and diesel engine builders, parts for shell loading plants, turret shields, gun-mounts, slides, carriages, etc.

State specifically what proportion of your products currently produced are:

(a) for use in the war effort 100%

(b) for civilian use _____

Is expansion or further conversion contemplated in war production? _____

Number employees

Number additional

Number additional

now

needed in next 6 months

needed in next year

Explain _____

Is a replacement training program in operation? _____

Contemplated? _____

Explain _____

This form was completed at the plant or office of the company located at

4609 Tod Avenue East Chicago, Indiana

and all correspondence relative to this affidavit should be so addressed.

I, G. V. Melgren

MAR 21 1945, do solemnly swear (or affirm)

that I am Vice-president

(Official position)

of the above-named company, and that the

foregoing statements are true to the best of my knowledge and belief,

Subscribed and sworn to before me this

30th

day of

January

1945

Charles L. Miller

(Signature of official administering oath)

Notary Public

(Official designation of official administering oath)

INSTRUCTIONS: This form is to be filled out by an employer or other person who has knowledge of the registrant's eligibility for Class II deferment as a necessary man in his civilian occupation or activity. If the registrant is deferred, the employer must notify the Local Board promptly of any change in the registrant's job status, or if his employment is terminated.

REGAL CHEMICAL CORPORATION

115-117 DOBBIN STREET • BROOKLYN 22, NEW YORK

Telephone: EVergreen 6-8727

December 13th, 1944

Local Board No. 246 23
Queens County 081

DEC 14 1944

Selective Service Board 246
41-00 45th Street
Long Island City, New York

46-27 Greenpoint Ave. 246
Long Island City 4, N. Y. 23
Local Board No. 245 081
Queens County

Re: Abraham Brothman
Order #32

DEC 15 1944

4301 - 46th Street 246
Sunnyside, L. I. 4, N. Y.

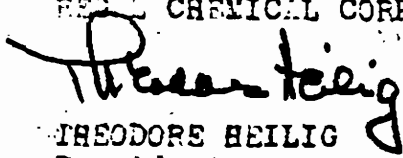
Gentlemen:

On December 13th, 1943 we directed a letter to you regarding Abraham Brothman, who was at that time engaged by us in an important program in behalf of the United States Army.

We now wish to inform you that Abraham Brothman has not been in our employ since August 14th, 1944.

Very truly yours,

REGAL CHEMICAL CORPORATION


THEODORE HEILIG
President

JUN 20 1944

THE CHEMURGY DESIGN CORPORATION

A DIVISION OF SOLVENE CHEMICALS CORPORATION

4301 - 46th Street

Sunnyside, L. I., N. Y.

ENGINEERS & FABRICATORS OF
PROCESSING PLANTS
PROCESS EQUIPMENT

420 LEXINGTON AVENUE

NEW YORK CITY

PHONE LEXINGTON 2-0740

June 19, 1944

Local Board No. 245

43-01 46th St.

Long Island City, N. Y.

Subject: Mr. Abraham Brothman

Order No. 52

Gentlemen:

In support of the attached form 421, we respectfully submit the following:

The Chemurgy Design Corporation is currently engaged in the following activities:

- a. consulting engineering on the chemical aspects and mechanical performance of Aerosol Insecticide Bombs for the Bridgeport Brass Company, Bridgeport, Conn. These containers are made and filled under U.S. Navy Contract Nos. N15X-33294 and N15X-45485. Please see the attached letter from the Bridgeport Brass Company.
- b. consulting engineering to the Regal Chemical Corp., Brooklyn, New York in the filling of Aerosol Insecticide Bombs under U. S. Navy Contract No. N15X-33294. We have already built for the Regal Chemical Corporation a plant for formulating and filling the mixture into containers at the rate of 300,000 per month. At the U. S. Navy's request we are now entering upon an expansion of these facilities in a new building so that a capacity of 500,000 containers per month will be possible at the new locale. The presently operating plant has been adjudged by Navy officials to be the most compact and accurate plant from the standpoint of chemical formulation and precision of filling now in existence. This plant embodies automatic control and continuous operation features in which our company specializes. It is to be noted that our services in connection with the Regal Chemical Corp. involve the continuous direction by us of Regal's production and development programs.
- c. the design of a plant, at the request of the Brass Goods Company, Brooklyn, New York for the filling of Aerosol Insecticide Bombs at the rate of 150,000 per month. Negotiations for the conclusion

JUN 20 1944

1301 - 46th Street

Gunnraide, L. I. & N. Y.

of this contract by the Brass Goods Company with the U. S. Navy are currently being completed.

4. the design of field filling equipment for refilling exhausted Aerosol Insecticide Bombs at base installations and behind-the-lines temporary stations. Please see the attached Bridgeport Brass Company letter.

5. consulting engineering and equipment design work for International Engineering, Inc., Dayton, Ohio. Work done by this office and now in the process of being completed includes:-

1. U.S. Navy Mine Depot Order No. M-1098-1683
2. Supply Officer Navy Yard Order No. SP-18757-44
3. U.S. Maritime Commission Order No. PD-MC44-28058, on Contract MCO-24803
4. U.S. Maritime Commission Order No. PD-MC44-23456
5. Air Corps Wright Field Order No. (33-038)-44-5278-M
6. Army Air Force Agent for DPC Order No. ARCO-B5284
7. Defense Plant Corporation for Republic Steel Corp. Flancor 1714-Requisition 119 - Account 232,100
8. Lend-Lease for Russia Order No. DA-LPS-50565

The materials covered by these contracts include magnesium casting impregnating autoclaves, billet cars, hatch combing plates, portable mixers, ventilators for ship holds, axial fans for new fighter planes, marine mine dollies, and ingot cars. Please refer to attached letter from International Engineering, Inc.

6. design and construction of a nickel catalyst and nickel salts manufacturing plant for Rufert Chemical Co., Div. of Seymour Mfg. Co., Seymour, Conn. The output of this plant will go primarily to the production of synthetic rubber, high-octane aviation gasoline fuels, butadiene, special engine lubricants, and hardened lard for Army field rations. See attached letters from Rufert Chemical Co.
7. design, construction, and initial operation of a plant for the production of synthetic resins to be used in airplane parts manufacture. This plant is to be shipped to China thru Lend Lease by our client, the Commission on Aeronautical Affairs for the Republic of China.

The reasons why we are making this special application on Mr. Brothman's behalf are the following:-

- a. this company's fields of endeavor demand a combination of the knowledge and principles of chemical and mechanical engineering, in particular and practical correlation of the basic principles of both of these fields. Mr. Brothman is currently the product of eleven years of

JUN 20 1944

of specialized training in this connection. See the attached articles "Design of a Urea Resin Plant" and "Batch-Continuous Process for Buna-S".

- b. the scope of the activities of this company, the wide variety of fields in which it operates, and the demands for specially designed equipment which it meets demands not just an ordinary engineer but a man combining practical engineering experience with a deep knowledge of the scientific principles of general engineering. Mr. Brothman's background and training in the application of the principles of advanced mathematical analysis, stress analysis, and vector analysis particularly adapt him to the executive engineering role which he performs in our company. See the attached articles on "New Approach to Continuous Reactor Design".
- c. the design of the special mechanical devices such as those which we have installed in connection with the Aerosol program demands an extraordinary level of ingenuity in the devising and grouping of basic mechanisms. In this connection Mr. Brothman is a co-developer of three items on which we are now applying for patents:-
 1. a valve presently under consideration by the U.S. Navy in connection with the Aerosol Bomb Dispenser
 2. field filling equipment for refilling exhausted containers.
 3. automatic equipment for the plant filling of Aerosol Bombs.

These opinions as to Mr. Brothman's technical skill and rare capabilities are entertained not only by the writer but as will be noticed from the attached letters by our clients as well. Noteworthy too is the estimate placed on Mr. Brothman's abilities by such a recognized member of the teaching profession as Dr. B. O. Koopman, head of Department of Mathematics, Columbia University. Please see attached letter from Dr. B. O. Koopman in this connection.

In view of the unusual circumstances cited above and the volume of direct war work which we are engaged in we most urgently solicit your favorable consideration to this application.

Yours very truly,
The Chemurgy Design Corporation

A. P. Weber
A. P. Weber
Secretary

AW:aj
encl.

SELECTIVE SERVICE SYSTEM

AFFIDAVIT—OCCUPATIONAL CLASSIFICATION (Industrial)

(Affidavit—Occupational Classification (General), Form 42, is provided for use in activities where the items on this form are not applicable)

JUN 20 1944

Name of registrant

Abraham Brothman

4301 160th Street

Sunray, L. I., N. Y.

Selective Service Order No.

52

Age

30 years - 10 months

Local Board

245

Queens

New York

New York

Title of present job

Chief Engineer and Vice President

State whether journeyman, apprentice, helper, certificated, licensed, professional engineer, etc.:

Chemical Engineer

Describe duties actually performed Unit Process Equipment Design, Process Plant Engineering,

Machine Design, Stress Analysis, Mathematical Analysis of Chemical, Physical,

(Be specific—include name of machine or machine tool, process, materials, etc.)

and Mechanical Phenomena, Process Development Research

(See attached letter)

Date employed

June, 1942

Date entered present job

June, 1942

Average weekly rate of pay, \$

\$203.00

Average hours worked per week

60

Prior work experience

Chief Engineer, Hendrick Mfg. Co., Carbondale, Pa.

Chief Engineer, Blaw-Knox Co., Pittsburgh, Pa.

Educational background

Chemical Engineers Degree

(Fill out if necessary to establish employee's qualifications for a particular job)

School of Engineering, Columbia University

New York City

How long will it take you to replace this employee? In view of Mr. Brothman's duties, skill,

experience and training and in view of the manpower shortage we cannot make a

a definite commitment in this regard.

What specific steps have you taken to secure or train a replacement for this registrant? Application

to the USIS (still pending) and other diligent efforts to secure and/or train

a replacement for the registrant have met with no success.

AFFIDAVIT—OCCUPATIONAL CLASSIFICATION (Industrial)—Continued

Name of company The Chemistry Design Corporation

(Corporation, partnership, individual—If self-employed, so state)

Address of company 420 Lexington Avenue, New York 17, N. Y.

(Location of plant, office, or division where registrant is employed)

Description of the activities of this company

1. The design, engineering, construction, and erection of process equipment and complete process plants (with emphasis on continuous as opposed to batch type production).
2. The development of new chemical processes, and mechanical and chemical engineering equipment.
3. Chemical and chemical engineering research.

State specifically what proportion of your products currently produced are:

(a) for use in the war effort 100%

(b) for civilian use

Is expansion or further conversion contemplated in war production? Yes

Number employees

Number additional

Number additional

now 11

needed in next 6 months 3

needed in next year ?

Explain Assuming that we maintain our present volume of business and that we are involved in a contemplated Navy program we will have to bolster our technical staff by about three engineers.

Is a replacement training program in operation? Yes

Contemplated?

Explain We use draftswomen and laboratory technicians wherever possible in order to relieve the manpower shortage.

This form was completed at the plant or office of the company located at

420 Lexington Avenue, New York 17, N. Y.

and all correspondence relative to this affidavit should be so addressed.

I, Arthur P. Weber

do solemnly swear (or affirm)

that I am

Secretary

of the above-named company, and that the

(Official position)

foregoing statements are true to the best of my knowledge and belief.

Arthur P. Weber
(Signature)

Subscribed and sworn to before me this

19 day of

19 46

(Signature of official administering oath)
CAROLYN E. JONES, Notary Public, N.Y. County

No. 123, Reg. No. 101, J-5

New York County No. 123, Reg. No. 101, J-5

(Official designation of official administering oath)

INSTRUCTIONS: This form is to be filled out by an employer or other person who has knowledge of the registrant's eligibility for Class II deferment as a necessary man in his civilian occupation or activity. If the registrant is deferred, the employer must notify the Local Board promptly of any change in the registrant's job status, or if his employment is terminated.

June 17, 1944

Local Board No. 245, Queens County
43-01 45th Street
Long Island City, N.Y.

Re: Abraham Brothman, No. 52

Gentlemen:

Mr. Abraham Brothman, the above, is our technical designer of equipment for the chemical and process industries, we manufacturing at the present time such equipment for Government Arsenal, the leading manufacturers of explosives, aluminum, penicillin, manganese, synthetic rubber, plastics for bombers, etc.

The loss of Mr. Brothman would mean delays for many months in the attainment of a technician of equal merit, with the resultant confusion in the process industries that we serve.

Men of Brothman's type are quite rare, and his induction will mean a great detriment to the operation of this Company as well as the kindred industries whom we serve.

This being an exceedingly exceptional case, we hope that you can see your way clear to grant him a further deferment.

Very truly yours,
INTERNATIONAL ENGINEERING, INC.

R.H. McElroy, President

RHM
EM

cc: Mr. Brothman

"Bridgeport"

BRIDGEPORT BRASS COMPANY

EXECUTIVE OFFICES AND MILLS - BRIDGEPORT, CONNECTICUT

AKRON OHIO
ATLANTA GA
BOSTON MASS
CHICAGO ILL
CINCINNATI OHIO
CLEVELAND OHIO
DENVER COLO
DETROIT MICH
GRAND RAPIDS MICH
HOUSTON TEXAS
LOS ANGELES CAL

NEW YORK, N.Y.

702 GRAYBAR BUILDING
420 LEXINGTON AVENUE

MILWAUKEE WIS
NEWARK N J
NEW YORK N Y
PHILADELPHIA PA
PITTSBURGH PA
PROVIDENCE RI
RICHMOND VA
ST LOUIS MO
SAN FRANCISCO CAL
SEATTLE WASH

June 16, 1944

TO WHOM IT MAY CONCERN:

This is to certify that Mr. A. Brothman is working directly with the Bridgeport Brass Co. in designing refilling equipment for field use in connection with the aerosol insecticide program for the navy. He is also consulting engineer on the chemical and mechanical aspects of the aerosol container as manufactured by the Bridgeport Brass Co. on prime Navy contracts N1ax-33294 and N1ax-45488.

The ingenuity of Mr. Brothman in developing the initial filling equipment used on the above contracts has created a system that is reported to us to have the closest tolerances on the formulation of the Aerosol mixture.

In view of the importance of the aerosol insecticide program in combating malaria in most theatres of war, Mr. Brothman's work is of vital importance.

Very truly yours,

BRIDGEPORT BRASS CO.

J. H. Mills
John H. Mills

Manager, Container Dept.

JHM/e

Columbia University
in the City of New York

DEPARTMENT OF MATHEMATICS

December 27, 1943

Gentlemen:

Mr. Abraham Brothman has been known to me since he was my student at Columbia University and I am well acquainted with his abilities and with his present work. I can assert that he has a rare combination of practical engineering experience with a deep knowledge of the scientific principles of his subject. He is not just an ordinary engineer, but a man of such unusual capacity and special power that he could not be replaced. Moreover, he is devoting absolutely all his time and energy to important work connected with the war.

The whole question is how Mr. Brothman can best be used by his country for winning the war. The answer is perfectly obvious to those who like myself are in contact with the technical side of our war effort: He should be maintained in exactly his present position.

It is fortunate for the United Nations that it has been the wise policy of draft boards to see that men of irreplaceable practical scientific ability like Mr. Brothman are permitted to remain in technical war work rather than be drafted into the armed forces. For without their ability we should have lost the war.

Believe me to be

Very truly yours,

Bernard Osgood Klopman
Associate Professor

Office Memorandum • UNITED STATES GOVERNMENT

TO : Mr. D. M. Ladd

DATE: November 7, 1950

FROM : A. H. Belmont

Time of Call: 5:45 p.m.

SUBJECT: ABRAHAM BROTHMAN

ESPIONAGE - R

CONSPIRACY TO DEFEAT J

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED

DATE 4/6/87 BY 3040PAT/Imv

ASAC Whelan furnished the following information:

It will be recalled that Harry Gold informed that he was told by Brothman that Alexander Svenchansky, also known as, Shura Swan, was the person who introduced him, Brothman, into Soviet espionage. Subsequent investigation identified Svenchansky as the Program Officer of the European and Middle Eastern Service of the United Nations.

Pursuant to Bureau instructions, Svenchansky was interviewed today in the presence of his attorney. He readily admitted his identity and stated that he was frequently known as Shura Swan. He admitted that at one time he was employed by the Amtorg Trading Corporation. When he was asked if he had been in contact with Brothman during this period, he refused to answer on the grounds of self incrimination.

This situation was presented to the United States Attorney at New York who indicated his desire to issue a trial subpoena for the appearance of Svenchansky at the forthcoming trial of Brothman. The United States Attorney stated that he did not desire to use Svenchansky as a witness, but stated that Svenchansky's appearance in court might have a favorable affect on Brothman and might tend to break him down. The United States Attorney requested the Agents of the New York Office to serve the trial subpoena on Svenchansky. ASAC Whelan stated that this request was declined principally because Svenchansky is a United Nations employee and there is no apparent reason why the subpoena should not be served by a United States Marshal.

ACTION:

The above is for your information and it is recommended that the answer of the New York Office to the United States Attorney is correct.

WAB:hb

RECORDED - 41

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EX-29

XXXXXX
XXXXXX
XXXXXXFEDERAL BUREAU OF INVESTIGATION
FOIPA DELETED PAGE INFORMATION SHEET

1 Page(s) withheld entirely at this location in the file. One or more of the following statements, where indicated, explain this deletion.

☒ Deleted under exemption(s) b1 with no segregable material available for release to you.

☐ Information pertained only to a third party with no reference to you or the subject of your request.

☐ Information pertained only to a third party. Your name is listed in the title only.

☐ Documents originated with another Government agency(ies). These documents were referred to that agency(ies) for review and direct response to you.

_____ Pages contain information furnished by another Government agency(ies). You will be advised by the FBI as to the releasability of this information following our consultation with the other agency(ies).

_____ Page(s) withheld for the following reason(s):

☐ For your information: _____

☒ The following number is to be used for reference regarding these pages:

100 - 365040 - 355

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XXXXXXXXXXXXXXXXXXXXXXXXXXX
X DELETED PAGE(S) X
X NO DUPLICATION FEE X
X FOR THIS PAGE X
XXXXXXXXXXXXXXXXXXXXX

DEPARTMENT OF JUSTICE
INVESTIGATIONS SECTION

OCT 23 1950

~~SECRET~~

TELETYPE

~~CONFIDENTIAL~~

Mr. Tolson ☒
Mr. Ladd ☒
Mr. Clegg ☒
Mr. Glavin ☒
Mr. Nichols ☒
Mr. Rosen ☒
Mr. Tracy ☒
Mr. Harbo ☒
Mr. Belmont ☒
Mr. Mohr ☒
Tele. Room ☒
Mr. Nease ☒
Miss Gandy ☒

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WHERE SHOWN OTHERWISE.

WASH FROM NEW YORK 33 23 837 P

DIRECTOR URGENT

Classified by 3642 PNT / 1mw / 10/1/87
Declassify on: OADR 4/6/87

ABRAHAM BROTHMAN, WAS, MIRIAM MOSKOWITZ, WAS, ESP - R. AUSA ROY

M. COHN ADVISED THIS DATE THAT AS RESULT OF CONFERENCE BETWEEN
HIMSELF, USA IRVING SAYPOL, AND JAMES MC INERNEY OF DEPARTMENT, IT
WAS DECIDED THAT TENTATIVE DATE FOR STARTING SUBJECTS TRIAL WOULD BE
NOV. SIX NEXT. UNDER THIS SCHEDULE, JURY WOULD BE PICKED ON FIRST
DAY WITH ACTUAL TAKING OF TESTIMONY BEGINNING NOV. EIGHT, ELEVENTH
BEING ELECTION DAY. HARRY GOLD EXPECTED TO BE IN NYC, OCT. TWENTY,
SIX NEXT FOR PRE-TRIAL CONFERENCE. FOR INFO BUREAU, AUSA COHN STATED
HE WILL PROBABLY USE AT TRIAL FOR PURPOSE OF IDENTIFYING SAM,
PR-ONE PICTURE OF SEMENOV, TOGETHER WITH REPRESENTATIVE OF STATE
DEPARTMENT TO INTRODUCE PICTURE INTO EVIDENCE. COHN STATED HE MIGHT
USE PICTURE OF SEMENOV [REDACTED]

[REDACTED] (S) SINCE GOLD MORE READILY IDENTIFIED THIS
PICTURE. OFFICIALS FROM B. G. BADGER AND CO. WOULD FURTHER IDENTIFY
SEMENOV FROM THIS PICTURE. COHN IS UNDECIDED AT PRESENT WHICH

END OF PAGE ONE

~~CONFIDENTIAL~~

G. I. R. - 1

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EX - 52

61 NOV 14 1950

100-365040-356
OCT 28 1950
Classified by 2355 WAE/DLB
Exempt from GDS, Category 3
Date of Declassification Indefinite

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SECRET

SECRET

CONFIDENTIAL

PAGE TWO

NY 100-100000
100-100000
100-100000

METHOD TO USE. BUREAU IS REQUESTED TO ADVISE WHETHER IT HAS ANY PREFERENCE IN THIS MATTER. PICTURE OF ALEXANDER SVENCHANSKY BEING SHOWN TO AMTORG INFORMANTS TO DETERMINE WHETHER HE IS IDENTICAL WITH SHURA SWAN. IT IS EXPECTED THAT THIS INVESTIGATION WILL BE COMPLETED WITHIN NEXT TWO DAYS, AT WHICH TIME RECOMMENDATION WILL BE MADE ON WHETHER OR NOT TO INTERVIEW SVENCHANSKY.

SCHEIDT

CONFIDENTIAL

END

NR 4

NY R 133

WA GW

cc. Mr. Tappan

SECRET

FEDERAL BUREAU OF INVESTIGATION
U. S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

OCT 31 1950

TELETYPE

WASHINGTON FROM NEW YORK 17 A 31 1026 P

DIRECTOR URGENT

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 4/6/87 BY 3042 PWT/IMW

Mr. Tolson	✓
Mr. Clegg	✓
Mr. Glavin	✓
Mr. Nichols	✓
Mr. Rosen	✓
Mr. Tracy	✓
Mr. Harbo	✓
Mr. Belmont	✓
Mr. Mohr	✓
Tele. Room	✓
Mr. Nease	✓
Miss Gandy	✓

ABRAHAM BROTHMAN, WAS., MIRIAM MOSKOWITZ, WAS., ESP DASH R.
REBUTEL OCTOBER TWENTY LAST. BORIS VOLYNSKY OF THE SIMMONS MACHINE,
TOOL CORP., NYC, A FORMER OFFICIAL AT AMTORG TRADING CORP. ADV
THAT SHURA SWAN IS IDENTICAL WITH ALEXANDER SVENCHANSKY NOW AT U.N.
VOLYNSKY SAID HE OBTAINED THIS INFO FROM THOMAS SWAN WITH WHOM HE
HAD TELEPHONE CONVERSATION REGARDING POSSIBILITY OF ENTERING BUSINESS
DEAL WITH THOMAS SWAN ON SALE OF SCRAP IRON. VOLYNSKY ORIGINALLY
TOLD OF THIS PROSPECTIVE DEAL BY JOSEPH KASATCHKOFF WHO WAS WITH
AMTORG ABOUT ONE NINE THREE FIVE TO ONE NINE THREE SIX. KASATCHKOFF
TOLD VOLYNSKY THAT THOMAS SWAN-S NAME ORIGINALLY WAS THOMAS SVENCHANSKY
AND THAT HE HAD TELEPHONE NUMBER OREGON NINE DASH NAUGHT ONE FOUR
SIX. TELEPHONE DIRECTORY LISTS THIS NUMBER TO GOSWAN PRODUCTS INC.,
THREE FOUR SEVEN MADISON AVE., NYC. VOLYNSKY THEN CALLED THOMAS
SWAN AND IT WAS IN THIS CONVERSATION THAT THOMAS SWAN DEFINITELY
IDENTIFIED SHURA SWAN AS HIS BROTHER CURRENTLY WORKING WITH U.N.
VOLYNSKY FURTHER IDENTIFIED PICTURE OF ALEXANDER SVENCHANSKY AS

58 NOV 29 1950
END PAGE ONE

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25

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PAGE TWO

THAT OF INDIVIDUAL KNOWN TO HIM AS SWAN. SAID SHURA SWAN WAS WITH TEXTILE SYNDICATE FORMED BY CHASE NATIONAL BANK ABOUT ONE NINETWO FIVE TO PURCHASE AMERICAN COTTON FOR RUSSIA. ALSO, CI Z. BROWN IDENTIFIED PICTURE OF ALEXANDER SVENCHANSKY AS INDIVIDUAL KNOWN TO HIM UNDER NAMES OF SVENCHANSKY AND SWAN, FIRST NAME NOT RECALLED.

Z. ~~X~~ BROWN ALSO SAID THIS LATTER SWAN CAME TO AMTORG FROM TEXTILE SYNDICATE SVENCHANSKY IS CURRENTLY EMPLOYED AS PROGRAM OFFICER IN EUROPEAN AND MIDDLE EASTERN SERVICE AT U.N. HE IS AN AMERICAN CITIZEN.

*11/1/59
Held
OK*
BUREAU AUTHORITY IS REQUESTED TO INTERVIEW HIM REGARDING THE ALLEGED INTRODUCTION BY HIM OF BROTHMAN INTO SOVIET ESPIONAGE AND ALSO HIS KNOWLEDGE OF BROTHMAN-S SUBSEQUENT ESP. ACTIVITIES. AUTHORIZATION ALSO REQUESTED TO DISCUSS THIS MATTER WITH USA, SDNY, REGARDING POSSIBILITY OF BRINGING SHURA SWAN BEFORE GRAND JURY. ALEXANDER SVENCHANSKY IS SUBJ OF BUFILE ONE HUNDRED DASH TWO ONE NINE SEVEN ONE NAUGHT.

SCHEIDT

HOLD PLS

cc: Mr. Belmont
Mr. Tamm

NOVEMBER 2, 1950 - URGENT

SAC, NEW YORK

ABRAHAM BROTHMAN, ESPIONAGE R. YOU ARE AUTHORIZED TO CONDUCT AN IMMEDIATE INTERVIEW OF ALEXANDER SVENCHANSKY WHO IS PRESENTLY EMPLOYED AS PROGRAM OFFICER IN THE EUROPEAN AND MIDDLE EASTERN SERVICE OF THE UNITED NATIONS. UPON COMPLETION OF THIS INTERVIEW YOU MAY DISCUSS THE MATTER WITH THE UNITED STATES ATTORNEY, SOUTHERN DISTRICT OF NEW YORK FOR HIS CONSIDERATION ON THE POSSIBILITY HE MAY DESIRE TO BRING SVENCHANSKY BEFORE THE FEDERAL GRAND JURY

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HOOVER

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DATE 4/7/87 BY 3042 PWT/21710
JAN

NOTE: A review was made of the main case file and C references pertaining to Alexander Svehchansky. The main file reflected that Alexander Svehchansky was born in Theodosia, Russia on March 6, 1909. He came to the United States in 1923 and was naturalized as a United States citizen on May 29, 1929. He was employed by Amtorg Trading Corporation, New York City, as a translator from April, 1932 to May, 1942, and thereafter worked for a period of time with the Soviet Government Purchasing Commission at Washington, D. C. Svehchansky was inducted in the United States Army in December, 1942, and served as an official translator at the Army Air Base at Whitehorse, Alaska.

While serving in the capacity of translator at the above-mentioned Army Air Base, it was alleged by a fellow employee that various NKVD men arriving their with Russian officials would always talk to Svehchansky on the side. (100-219710-18)

advised on May 15, 1946, that Rose Reuben of the American Russian Institute in New York City made inquiry of Brothman relative to a translator for technical Russian terms, and further that Brothman suggested to her the names of three individuals among which was that of Shurk, who has been identified as Alexander Svehchansky. (65-58805-100) A check of these files and C references failed to reflect any additional information as to possible subversive or espionage activities on the part of Svehchansky.

Tolson _____
Ladd _____
Clegg _____
Glavin _____
Nichols _____
Tracy _____
Harbo _____
Belmont _____
Mohr _____
Tele. Room _____
Nease _____
Gandy _____

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FEDERAL BUREAU OF INVESTIGATION
U.S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

OCT 27 1950

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DATE 4/6/87 BY 3042 PNT/lmn

Mr. Tolson	_____
Mr. Ladd	_____
Mr. Clegg	_____
Mr. Glavin	_____
Mr. Nichols	_____
Mr. Rosen	_____
Mr. Tracy	_____
Mr. Egan	_____
Mr. Gurnea	_____
Mr. Harbo	_____
Mr. Hendon	_____
Mr. Pennington	_____
Mr. Quinn	_____
Mr. Nease	_____
Miss Gandy	_____

100-370679-1

WASHINGTON FROM NEW YORK

27

8-56AM

DIRECTOR

DEFERRED

ABRAHAM BROTHMAN, WAS., MIRIAM MOSKOWITZ, WAS., ESP - R. MRS. GERTRUDE
KOGON APPEARED BEFORE FGJ OCT. TWENTYSIX. AUSA COHN ADVISED THAT KOGON
DECLINED TO ANSWER ANY PERTINENT QUESTIONS ON GROUNDS OF SELF
INCRIMINATION. COHN CONSIDERING FURTHER EXAMINATION AND POSSIBLE
CONTEMPT PROCEEDINGS.

SCHEIDT

HOLD PLS

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INDEXED - 96

001 28 1950

58 NOV 20 1950

cc: Mr. *Ryfe* here

FEDERAL BUREAU OF INVESTIGATION
U. S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

OCT 28 1950

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DATE 4/6/87 BY 3042 PNT/IMW

WASHINGTON FROM NEW YORK 13 28 9-50AM

DIRECTOR DEFERRED

ABRAHAM BROTHMAN, MIRIAM MOSKOWITZ, ESP - R. RE ISIDORE NEEDLEMAN
WHO WOULD BE A CORROBORATIVE WITNESS TO HARRY GOLD-S TESTIMONY IN
PENDING TRIAL. [REDACTED] ADVISED OCT. TWELVE, THAT NEEDLEMAN,
FORMER ATTORNEY FOR AMTORG, HAS BEEN A LOYAL CP MEMBER SINCE EARLY
NINETEEN THIRTIES, AND IS IN PRESENT GOOD STANDING WITH CP DESPITE
BEING NAMED FBI INFORMANT IN COPLON TRIAL. SINCE COPLON TRIAL NEEDLE-
MAN HAS EXPRESSED HIS ANIMOSITY TOWARDS BUREAU IN PRIVATE CONVERSATION
AND IN PUBLIC PRESS. AS BROTHMAN FOLLOWED NEEDLEMAN-S COUNSEL RE-
GARDING BROTHMAN-S FORTY SEVEN FGJ APPEARANCE, AND AS ULTIMATE
PURPOSE OF INTERVIEW WOULD BE HIS USE AS WITNESS IN TRIAL, THIS
OFFICE DOES NOT CONTEMPLATE INTERVIEWING NEEDLEMAN. HOWEVER, NEEDLE-
MAN-S ASSOCIATION WITH BROTHMAN WILL BE CALLED TO ATTENTION OF USA IN
EVENT USA DESIRES TO SUBPOENA NEEDLEMAN BEFORE GJ. IT IS BELIEVED
NEEDLEMAN WILL CLAIM PRIVILEGE WITH REGARD TO HIS DISCUSSIONS AND
ASSOCIATIONS WITH BROTHMAN.

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SCHEIDT

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HOLD PH

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EX. 36

Mr. Tolson
Mr. Ladd
Mr. Clegg
Mr. Glavin
Mr. Nichols
Mr. Rosen
Mr. Tracy
Mr. Harbo
Mr. Belmont
Mr. Mohr
Tele. Room
Mr. Nease
Miss Gandy

FIVE

cc. Mr. Belmont
Mr. Langhorne

Office Memorandum • UNITED STATES GOVERNMENT

TO : Mr. A. H. Belmont

DATE: October 30, 1950

FROM : C. E. Hennrich

SUBJECT: ABRAHAM BROTHMAN
ESPIONAGE - R

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 4/6/87 BY 3042 PWT/lmw

Tolson _____
Ladd _____
Clegg _____
Glavin _____
Nichols _____
Rosen _____
Tracy _____
Harbo _____
Belmont _____
Mohr _____
Tele. Room _____
Nease _____
Gandy _____

PURPOSE:

To authorize Special Agent H. L. Dahlgren of the FBI Laboratory to deliver to the New York Office the original photostatic copy plus the U. S. Consul's certification as to Brothman's hotel registrations in Switzerland at the time he appears in New York City on October 31, 1950, for a pre-trial conference in this case.

ACTION:

Upon receipt of the air mail communication from the Legal Attache in London today enclosing photostatic copies of Brothman's and Moskowitz's hotel reservations in Switzerland, together with the certification from the United States Consul in Switzerland, relative to these hotel registrations, same were immediately photostated and the original together with copies thereof furnished to SA H. L. Dahlgren of the Laboratory. It might be noted that Document Examiner Dahlgren has previously examined other specimens in connection with the Brothman case and is scheduled to be in New York City at 8:30 A.M. on October 31, 1950, for a pre-trial conference with the United States Attorney in connection with this case.

Advice was subsequently received to the effect that the handprinting appearing on the hotel registrations of Abraham Brothman has been identified as the handprinting of Brothman. It will, accordingly, be necessary for the Document Examiner to discuss the results of his findings in this respect with the United States Attorney at the pre-trial conference.

RECOMMENDATION:

In view thereof, it is recommended that SA Dahlgren be authorized to deliver to the New York Office at the time of his appearance the original photostatic copies together with the certification by the United States Consul along with the Laboratory examination report in connection with this matter. A teletype is being attached hereto advising the New York Division in the premises.

Attachment

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100-365040

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10/30

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100-365940-360

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CONFIDENTIAL

OCTOBER 30, 1951

URGENT

To: COMMUNICATION

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE

100-303000
SAC, NEW YORK

Classified by 3042 PWT/lmw
Declassify on: OADR 4/6/85

ABRAHAM BROTHMAN, ESP DASH R. ADDITIONAL INFO RECEIVED FROM SWITZERLAND

DISCLOSES THAT BOTH BROTHMAN AND MOSKOWITZ STAYED AT THE SCHWEITZERHOF HOTEL, BASAL, FROM MAY SEVENTEEN TO NINETEEN, NINETEEN FORTY EIGHT; FROM MAY TWENTY SEVEN TO THIRTY ONE, NINETEEN FORTY EIGHT AND FROM JUNE SIXTEEN TO EIGHTEEN, NINETEEN FORTY NINE. THESE HOTEL REGISTRATION FORMS SIGNED BY BROTHMAN ONLY.

FURTHER, INFO REFLECTS BOTH SUBJECTS OCCUPIED SEPARATE BUT CONNECTING ROOMS NO. FIVE AND NO. SIX IN MAY, NINETEEN FORTY EIGHT AND SEPARATE AND UNCONNECTING ROOMS NUMBERS EIGHTY FOUR AND EIGHTY SIX IN JUNE, NINETEEN FORTY NINE. IT WAS ASCERTAINED THROUGH

[REDACTED]

IT WAS FURTHER REPORTED THAT BOTH SUBJECTS REGISTERED AND STAYED AT PARK HOTEL, VITZNAU, FROM MAY TWENTY TO TWENTY SEVEN, NINETEEN FORTY EIGHT OCCUPYING SEPARATE ROOMS FOURTEEN AND FIFTEEN.

PHOTOSTAT AND CERTIFIED COPY OF HOTEL REGISTRATIONS WERE FORWARDED TO BUREAU AND EXAMINATION OF LAB REFLECTS THAT REGISTRATIONS OF BROTHMAN WERE HANDPRINTED BY BROTHMAN. U.S. DEPARTMENT OF JUSTICE LAB REPORT COVERING THESE EXAMINATIONS TOGETHER WITH COMMUNICATIONS SECTION PHOTOSTAT AND CERTIFIED COPY OF HOTEL REGISTRATIONS BEING DELIVERED YOUR OFFICE TOMORROW BY LAB EXAMINER M. L. DANLOREN, WHO MADE INSTANT EXAMINATION AND IS

Tolson
Ladd
Clegg
Glavin
Nichols
Rosen
Tracy
Harbo
Belmont
Mohr
Tele. Room
Nease
Gandy

APPEARING TELETYPE TRIAL CONFERENCE.

G.I.R.-7

INITIALED
DIRECTOR'S OFFICE

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100-365040-360

INDEXED - 10

52 NOV 15

CONFIDENTIAL

HOOVER

Per [Signature]

[Signature]

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U. S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

OCT 30 1950

TELETYPE

WASH 6, NYC 3 FROM CHICAGO

30

4-58PM

DIRECTOR AND SAC

URGENT

G.I.R.-7

Mr. Tolson	_____
Mr. Ladd	_____
Mr. Clegg	_____
Mr. Glavin	_____
Mr. Nichols	_____
Mr. Rosen	_____
Mr. Tracy	_____
Mr. Harbo	_____
Mr. Mohr	_____
Tele. Room	_____
Mr. Nease	_____
Miss Gandy	_____

ABRAHAM BROTHMAN, WAS. ESP. DASH R. RE NY TEL TWENTY SEVENTH INSTANT.
MILTON SPIEGEL, VICE PRESIDENT, CHICAGO PUMP CO., ADVISES BROTHMAN
RETAINED IN FALL, NINETEEN FORTY TWO TO MAKE SURVEY OF POSSIBLE APPLI-
CATION OF COMPANY PRODUCTS TO USE IN THE FIELD OF INDUSTRIAL CHEMISTRY.
WORK WAS RELATED TO POSSIBLE POST WAR EXPANSION OF COMPANY INTO THAT
FIELD, WAS ENTIRELY PROSPECTIVE AND HAD NO RELATION TO NATIONAL DEFENSE
NOR TO ANY EXISTING DEFENSE CONTRACTS OF THE COMPANY. WORK WAS NOT
CONFIDENTIAL NOR RESTRICTED IN NATURE. BROTHMAN DEALT WITH SPIEGEL
AND PHILIP F. MORGAN, THEN CHIEF ENGINEER, CHICAGO PUMP COMPANY, AND
NOW ASSISTANT PROFESSOR OF SANITARY ENGINEERING, UNIV. OF IOWA, IOWA
CITY. SPIEGEL AND OTHER COMPANY OFFICIALS MET BROTHMAN AND WEBER IN
CHICAGO IN NOVEMBER OR DECEMBER, NINETEEN FORTY TWO, BUT HAVE NO INFO
RE MOSKOWITZ OR HARRY GOLD, AND NO KNOWLEDGE OF ESPIONAGE ACTIVITY
ON PART OF BROTHMAN. NY ADVISE OMAHA IF MORGAN INTERVIEW DESIRED.
REPORT FOLLOWS.

ALL INFORMATION CONTAINED
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EX-16

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cc Mr. Ladd

FEDERAL BUREAU OF INVESTIGATION
U. S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

NOV 2 1950

TELETYPE

Mr. Tolson	
Mr. Ladd	
Mr. Clegg	
Mr. Glavin	
Mr. Nichols	
Mr. Rosen	
Mr. Tracy	
Mr. Egan	
Mr. Belmont	
Mr. Mohr	
Tele. Room	
Mr. Nease	
Miss Gandy	

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DATE 4/4/87 BY 3042 PNT/IMW

WASHINGTON FROM NEW YORK 2 A

2

3-06 PM

DIRECTOR

URGENT

G. I. R. -7

ABRAHAM BROTHMAN, ESP- R. THERE ARE BEING FORWARDED TO FBI LAB VIA
SPECIAL DELIVERY REGISTERED MAIL TODAY NUMEROUS SPECIMENS OF BROTH-
MAN-S KNOWN HANDWRITING WHICH WERE OBTAINED FROM GOLWYNNE CHEMICALS
CORP, FOUR TWO ZERO LEXINGTON AVE., NYC.

RECORDED

NOV 4 1950

Called Laboratory

SCHREIDT

END

NOV 15 1950

BY

DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

NOV 13 1950

ALL INFORMATION CONTAINED
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DATE 4/6/87 BY 504 J PWT

Mr. Tolson	_____
Mr. Ladd	_____
Mr. Clegg	_____
Mr. Glavin	_____
Mr. Nichols	_____
Mr. Rosen	_____
Mr. Tracy	_____
Mr. Harbo	_____
Mr. Belmont	_____
Mr. Mohr	_____
Tele. Room	_____
Mr. Nease	_____
Miss Gandy	_____

FBI NEW HAVEN 11-3-50 2-52 G.I.R.-7 MFS
DIRECTOR AND SACS, OMAHA, CHICAGO, AND NEW YORK URGENT

ABRAHAM BROTHMAN, WAS., ESP. R. SUBJECT HAS BEEN INDICTED BY FED GRAND JURY IN NYC FOR CONSPIRACY TO DEFEAT JUSTICE AND IS PRESENTLY AWAITING TRIAL IN NY. MR. ROSS C. POWELL OF MANSFIELD, CONN. IS PRESENTLY ON A TWO WEEK VACATION AND CAN BE LOCATED AT EITHER OF THE FOLLOWING ADDRESSES CARE OF CHARLES E. GREGG, BROTHER-IN-LAW, SIX NAUGHT FOUR SIX NORTH CLAIRMONT ST., CHICAGO, ILL. OR MRS. W. J. MC GUIRE, TWO TWO FOUR FIFTEENTH ST., NW, CEDAR RAPIDS, IOWA. POWELL KNOWN TO HAVE BEEN AT LEAST BUSINESS ACQUAINTANCE OF SUBJECT IN PAST. HE SHOULD BE INTERVIEWED RE HIS KNOWLEDGE OF ANY COMMUNIST OR ESPIONAGE ACTIVITY OF BROTHMAN AND OR MIRIAM MOSKOWITZ. FURTHER, IT SHOULD BE ASCERTAINED WHAT BUSINESS TRANSACTIONS POWELL HAD WITH BROTHMAN. ALSO INTERVIEW HIM CONCERNING HIS KNOWLEDGE OF ONE LECATUR, PHONETIC, WHO APPARENTLY IN NINETEEN FORTYSIX COULD HAVE BEEN EMPLOYED BY THE FIRM OF FLAGG, BRACKETT AND DURGIN FORMERLY OF LEOMINSTER, MASS. AND LATER OF BOSTON, MASS. AND LECATUR COULD HAVE BEEN ASSOCIATED WITH POWELL IN WHATEVER NEGOTIATION HE HAD WITH BROTHMAN. IF LECATUR IDENTIFIED AND HIS WHEREABOUTS IS LEARNED, TELETYPE SHOULD BE SENT TO THAT OFFICE TO INTERVIEW LECATUR RE ANY KNOWLEDGE OF COMMUNIST OR ESPIONAGE ACTIVITY OF BROTHMAN AND MOSKOWITZ. DETERMINE FROM POWELL IF HE HAS RECORDS OF BUSINESS

TRANSACTIONS WITH BROTHMAN AND IF SO WHERE THESE RECORDS MIGHT NOW BE

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38 MAR 5 1964

58 NOV 29 1950 INDEXED - 96

RECORDED - 50/10 - 365 040 - 323
NOV 25 1950

PAGE TWO

KEPT. INASMUCH AS EFFORTS ARE NOW BEING MADE TO LOCATE HANDWRITING SPECIMENS OF BROTHMAN OTHER THAN HIS SIGNATURE. IF ANY SUCH RECORDS ARE AVAILABLE THEY PROBABLY WILL BE MAINTAINED AT HIS HOME IN STORRS, CONN. IN WHICH EVENT IT SHOULD BE ASCERTAINED WHEN HE WILL BE RETURNING HOME. THIS CASE IS TO BE GIVEN PREFERRED ATTENTION IN VIEW OF PENDING TRIAL OF BROTHMAN AT NY.

WILLIS

OM AND CG ADVISED

END

ACK PLS

WA 2-59 PM OK FBI WA HK

NY OK FBI NYC EMCG

DISCV

CC: Mr Langhorne

INVESTIGATION
DEPT. OF JUSTICE
COMMUNICATIONS SECTION

NOV - 3 1950

TELETYPE

Mr. Tolson _____
Mr. Ladd _____
Mr. Clegg _____
Mr. Glavin _____
Mr. Nichols _____
Mr. Rosen _____
Mr. Tracy _____
Mr. Harbo _____
Mr. Belmont _____
Mr. Mohr _____
Mr. Nease _____
Miss Gandy _____

WASHINGTON 25 NEW YORK 7 FROM PHILA 11-3-50

DIRECTOR AND SAC.....URGENT

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DATE 4/6/87 BY 3042 PWT/IMW

ABRAHAM BROTHMAN, WAS., ESP - R. RENTEL OCT THIRTYONE LAST. KARL PAUL BILLNER, PRES., VACUUM CONCRETE INC., STATES HIS FIRM HAD NO BUSINESS DEALINGS OF ANY KIND WITH ABRAHAM BROTHMAN. BILLNER STATES HE WOULD HAVE PERSONAL KNOWLEDGE IF ANY BUSINESS CONTRACT ENTERED INTO BY HIS FIRM. HE STATES IT IS POSSIBLE BROTHMAN MAY HAVE REQUESTED A FOLDER OR PAMPHLET ON PRODUCTS OF VACUUM CONCRETE. THIS MAY HAVE BEEN SENT, BUT BILLNER STATES HE HAS NO KNOWLEDGE THIS SO. HE SAYS NO RECORD OF ALL INQUIRIES FOR PAMPHLETS KEPT. BILLNER ALSO SAYS HE REQUIRES DUN AND BRADSTREET RATING OF ALL FIRMS HE DOES BUSINESS WITH AND HAS NEVER REQUESTED ONE ON THE BROTHMAN FIRM. VACUUM CONCRETE HANDLES HIGHLY SPECIALIZED CONCRETE EQUIPMENT FOR CONSTRUCTION WORK WITH VARIOUS PATENTS FOR EQUIPMENT USED, BILLNER ADVISED. BILLNER SAID HE HAS NO KNOWLEDGE RE ANY CORRESPONDENCE AT HIS FIRM THAT MIGHT BEAR SPECIMENS OF BROTHMAN HANDWRITING.

RECORDED

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WA PLS HOLD NY AAD PLS.....

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52 NOV 28 1950

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NOV 4 1950
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FIVE
G.I.R.-7

Cc. Mr. [Signature]

FEDERAL BUREAU OF INVESTIGATION
U. S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

Mr. Tolson	_____
Mr. Ladd	_____
Mr. Clegg	_____
Mr. Glavin	_____
Mr. Nichols	_____
Mr. Rosen	_____
Mr. Tracy	_____
Mr. Harbo	_____
Mr. Belmont	_____
Mr. Mohr	_____
Mr. Nease	_____
Miss Gandy	_____

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DATE 4/6/82 BY 3042 PWT/lmw

NOV - 4 1950

TELETYPE

WASHINGTON 11 AND NEW YORK 1 FROM BOSTON

DIRECTOR AND SAC

U R G E N T

G.I.R-7

12:15 AM

ABRAHAM BROTHMAN, WAS, MIRIAM MOSKOWITZ, ESPIONAGE DASH R. BUFILE
ONE HUNDRED DASH TWO FIVE ONE THREE FOUR. RENTELS OCTOBER THIRTY FIRST
AND BOSTELS NOVEMBER ONE. LAWRENCE AVERY, TREASURER, PHOTO SWITCH INC.,
SEVENTY SEVEN BROADWAY, CAMBRIDGE, ADVISED HIS FIRMS RECORDS CONTAIN
NO RECORD OF ANY CORRESPONDENCE WITH SUBJECTS OR BROTHMAN ASSOCIATES.
AVERY MADE INQUIRY OF HIS FIRMS CHIEF CHEMIST, DR. MC FEE, WHO STATED
NAMES OF SUBJECTS COMPLETELY UNFAMILIAR. INQUIRY AT WORCESTER, MASS.,
FAILED TO DEVELOP ANY INFO. KRIM-KO INC., NEVER LOCATED IN THAT CITY
OR SUBURBS. ADDRESS GIVEN IN RENTEL HAS BEEN OCCUPIED BY STATE MUTUAL
LIFE INSURANCE CO., FOR MANY YEARS. KRIM-KO INC. OFFICE RECORDS AT
SIXTY THREE DAVID STREET, NEW BEDFORD, REFLECT BROTHMAN ASSOCIATES IN
NINETEEN FORTY EIGHT MADE WRITTEN INQUIRY OF KRIM-KO NEW BEDFORD PLANT
WITH REFERENCE TO PURCHASE OF CHEMICALS FROM KRIM-KO. CORRESPONDENCE
WAS DIRECTED FROM BROTHMAN ASSOCIATES BY ONE PERSON WHO WAS NOT PER-
SONALLY KNOWN TO KRIM-KO OFFICIALS. LATTER PERSONS STATE NAMES OF
SUBJECTS COMPLETELY UNFAMILIAR. KRIM-KO AT NEW BEDFORD ENGAGED IN
BUSINESS OF DERIVING CHEMICALS FROM SEAWEED. PRINCIPAL OFFICER OF COM-
PANY LOCATED IN CHICAGO AND THERE HAS NEVER BEEN A KRIM-KO OFFICE AT
WORCESTER, MASS., PER NEW BEDFORD OFFICIALS. INASMUCH AS BOSTON INQUIR-
IES AS REFLECTED IN BOSTEL NOVEMBER ONE AND HEREIN HAVE FAILED TO
PROVIDE ADDITIONAL HANDWRITING SPECIMENS OR PERTINENT INFO, UACB NO

REPORT BEING SUBMITTED. RUC

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NOV 28 1950

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THORNTON

cc Mr. Laffey

100-365040-365

COMMUNICATIONS SECTION

NOV 5 1950

TELETYPE

Mr. Tolson _____
Mr. Ladd _____
Mr. Clegg _____
Mr. Glavin _____
Mr. Nichols _____
Mr. Rosen _____
Mr. Tracy _____
Mr. Harbo _____
Mr. Belmont _____
Mr. Mohr _____
Tele. Room _____
Mr. Nease _____
Miss Gandy _____

WASHINGTON -1 AND NEW YORK 1 FROM PHILADELPHIA

DIRECTOR AND SAC NEW YORK ...

A1-00 AM

ALL INFORMATION CONTAINED

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4/6/87 13040 PAT/IMW

ABRAHAM BROTHMAN, WAS., ESPIONAGE DASH R. RE NEWARK TEL NOVEMBER

SECOND. JEROME KLINE INTERVIEWED TODAY. HE STATES HE WAS VICE PRES. OF STANTON LABORATORIES WHILE BROTHMAN EMPLOYED THERE, HE HAS BEEN CORRESPONDING WITH BROTHMAN IN EFFORT TO REACH SETTLEMENT ABOUT CONTRACT BETWEEN STANTON LABORATORIES AND BROTHMAN. KLINE SAYS BROTHMAN AGREED NOT TO ENTER INTO COMPETITION WITH STANTON FIRM WHEN HE BEGAN WORK THERE AS CHEMICAL ENGINEER. KLINE SAYS BROTHMAN VIOLATED THIS AGREEMENT AND ENTERED INTO COMPETITION WITH STANTON LABORATORIES. KLINE SAYS BROTHMAN WHEN FIRED SAID STANTON STILL OWED HIM MONEY ON CONTRACT WHICH HE SIGNED WHEN COMING TO WORK AT STANTON LABORATORIES. BROTHMAN IN WEEK BEFORE ARREST HAD LETTER BY GROUP OF ATTORNEYS IN NY DIRECTED TO STANTON LAB SAYING LEGAL SUIT WOULD BE INSTITUTED TO COLLECT BALANCE DUE ON BROTHMAN CONTRACT IF AGREEMENT WERE NOT REACHED. KLINE SAID AFTER NEWS OF BROTHMAN-S ARREST APPEARED IN NEWSPAPERS, HE WROTE LETTER TO BROTHMAN SAYING HE WOULD GLADLY MEET BROTHMAN IN PHILA AND SETTLE MATTER. KLINE SAID HE RECEIVED NO ANSWER TO THIS LETTER. KLINE WILL REVIEW HIS FILES MONDAY NEXT TO DETERMINE IF HE HAS ANY BROTHMAN HANDWRITING AVAILABLE.

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NOV 7 1950

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Office Memorandum • UNITED STATES GOVERNMENT

TO : Director, FBI

DATE: November 7, 1950

FROM : SAC, Philadelphia

SUBJECT: ABRAHAM BROTHMAN
ESPIONAGE - R

(Bufile 100-360540)

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DATE 4/6/87 BY 304 SPWT/1mw

During the search of the THOMAS L. BLACK residence at 1929 North 6th Street, Philadelphia, a letter addressed to Mr. J. A. MULLEN, President, Spruce Chemical Company, 3357 Miller Street, Philadelphia 34, Pa., was found by SA ELWOOD A. PETT on June 15, 1950.

This letter bore a postmark of Long Island City, N.Y., and was dated July 7, 1948. The letter concerns itself primarily in giving HARRY GOLD a recommendation as a diligent worker. The letter bore the signature of A. BROTHMAN.

On July 12, 1950, THOMAS L. BLACK advised SA's WILLIAM B. VELTE, JR. and ROBERT W. HOLMES that the letter resulted from a conversation he had with HARRY GOLD. BLACK said that GOLD was interested in knowing whether he would get a favorable recommendation from ABRAHAM BROTHMAN if he used BROTHMAN's name as a reference. There was a question in GOLD's mind because he and BROTHMAN had quarreled over finances. GOLD therefore took this means to find out what BROTHMAN would say about him. GOLD requested BLACK to write a letter supposedly from JOSEPH MULLEN, President of Spruce Chemical Company. The letter previously described herein is the reply that BROTHMAN gave to the letter which BLACK wrote. BLACK advised that JOSEPH MULLEN had no knowledge that this was being done. BLACK advised that he furnished HARRY GOLD the information in this letter and GOLD appeared satisfied that BROTHMAN would recommend him favorably.

This letter is being submitted as an enclosure to the New York Office on the possibility that it may be of some assistance in the foregoing BROTHMAN trial.

RGJ/mm

65-4318

cc: New York (100-95016) (ENC.)

REGISTERED MAIL RETURN RECEIPT REQUESTED INDEXED - 24 NOV 9 1950
SPECIAL DELIVERY

cc: 65-4332

56 NOV 21 1950

G. I. R. -7

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24/100-365040-367

INDEXED - 24 NOV 9 1950

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FEDERAL BUREAU OF INVESTIGATION

Form No. 1
THIS CASE ORIGINATED AT **NEW YORK**

NY FILE NO. **100-33638**

hp

REPORT MADE AT NEWARK	DATE WHEN MADE 11/8/50	PERIOD FOR WHICH MADE 10/28,30,31;11/1-4,6/50	REPORT MADE BY BLAKE E. TURNER
TITLE ABRAHAM BROTHMAN, was.			CHARACTER OF CASE ESPIONAGE - R

SYNOPSIS OF FACTS: Contacts of subject in New Jersey interviewed and results set out. **SIDNEY FELDMAN**, chemical engineer at Merck and Company, Rahway, NJ, who formerly worked with subject and helped him publish articles in trade magazines, suspected **BROTHMAN** as CP member or sympathizer but no knowledge of subject's activities.

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DETAILS:

SIDNEY M. FELDMAN, 555 Alden Drive, Rahway, New Jersey, who has been employed as a chemical engineer at Merck and Company, Rahway, New Jersey, since July, 1941, graduated from City College of New York in June, 1941.

FELDMAN stated he first met **BROTHMAN** in 1941 through a fellow student, **ARTHUR WEBER**, who was employed at that time by the subject as a design engineer at a small firm in New York City, name not recalled. During the early part of his employment with Merck, **FELDMAN** sent "feelers" in the form of letters to various firms and individuals, including **BROTHMAN**, in an effort to obtain better employment. In 1944 **BROTHMAN** phoned **FELDMAN** at Merck and offered him part-time employment as a design engineer. At that time subject and **WEBER** were employed by the Chemurgy Design Corporation at the Graybar Building, New York City, which firm was engaged in doing consulting work for the Tedlee and Regal Chemical Company of Brooklyn, New York, which was headed by one **SEILIG** or **SIELIG**. The Chemurgy Company was headed by an individual named **GOLWYNNE**. **FELDMAN** advised **WEBER** is now with the International Equipment Company or Mixing Company located in Cleveland or Dayton, Ohio.

APPROVED AND
FORWARDED: *SKM/ka*

SPECIAL AGENT
IN CHARGE

DO NOT WRITE IN THESE SPACES

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NK 100-33638

FEIDMAN stated subject hired him in the early part of 1944 to do design work for Tedlee and Regal on a part-time basis at \$50 per week. FEIDMAN was to work three nights per week and Saturdays doing design work on the Aerosol Bomb, various packaging methods and designing laboratory setups for the future production of DDT.

Shortly after FEIDMAN accepted this employment BROTHMAN split with WEBER and GOLWYNNE, the latter staying at Chemurgy and WEBER going to the Kellogg Corporation, New York City. The subject formed the company known as A. Brothman and Associates at 114 - 32d Street, New York City. Other members of instant company included OSCAR VAGO, GUS WOLLON, EMIL MARISH, MIRIAM MOSKOWITZ, Secretary, SY MANDELKORN and a chemist named GIBBS, whose first name FEIDMAN did not know. An individual named JULES KORSHEIN used the facilities of BROTHMAN's office but, according to FEIDMAN, was not a member of the company. FEIDMAN stated the main group of subject's company appeared to be Red inclined. He stated that BROTHMAN and VAGO read the Daily Worker and took the Daily Worker viewpoint on all matters.

FEIDMAN continued his part-time employment with BROTHMAN as a consultant to Tedlee and Regal until September, 1944. He stated he received weekly salary checks from the Tedlee Company. He spent three nights per week in BROTHMAN's laboratory at 114 - 32d Street doing practical and design work as described above. He spent each Saturday in technical conference with Tedlee Company officials at their plant in Brooklyn.

In September, 1944, FEIDMAN was stricken with pneumonia for a period of three months. He later learned that BROTHMAN broke with the Tedlee Company shortly thereafter. FEIDMAN returned to his job at Merck on December 1, 1944 and again approached BROTHMAN in the early part of 1945 regarding additional employment. At this point FEIDMAN explained that he was not only interested in securing supplemental income through outside employment but he was interested in improving his technical knowledge of engineering. In this respect he stated he considered BROTHMAN to be a brilliant engineer from whom he could learn a lot.

FEIDMAN said in the early part of 1945 BROTHMAN was preparing to write a chemistry-engineering handbook and that FEIDMAN and SY MANDELKORN assisted him in writing this book. FEIDMAN stated that the subject and MANDELKORN would spend evenings at BROTHMAN's New York City office discussing the proposed book chapter by chapter and writing it at the end of each discussion. FEIDMAN stated that the subject, GUS WOLLON and himself also wrote two articles on missing materials which they published in the Chemistry and Metallurgy Engineering Magazine's April and May, 1945 issues, which magazine is now known as Chemistry-Engineering.

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FEIDMAN explained that when he worked with BROTHMAN after his illness that he did so without salary because BROTHMAN had no position for him and he was interested in getting his name into print. Toward the end of 1945 FEIDMAN drifted away from BROTHMAN since the latter did not require his services. FEIDMAN declined full-time employment with the subject because BROTHMAN's firm was small, most of his group seemed Red inclined, and FEIDMAN's job at March had steadily improved. FEIDMAN said from conversation he concluded that BROTHMAN, VAGO and MOSKOWITZ were Communist Party members or sympathizers. He stated, however, he had no knowledge of their outside activities since he was living in Elisabeth, New Jersey during the entire time since 1941.

FEIDMAN said that in 1944 or 1945 when he was classified 1-A BROTHMAN claimed that he was doing mathematics work at Columbia University in connection with some secret project and offered to help place FEIDMAN in either that work or some other type employment which would assure his deferment. In the spring of 1944 or 1945 the subject and FEIDMAN flew to Washington, D. C. at BROTHMAN's suggestion where subject attempted to obtain employment for FEIDMAN at the Bureau of the Navy. FEIDMAN stated subject took him to the Navy Building and left him outside. BROTHMAN entered the building, and when he came out he claimed to have talked to a famous mathematician, whose name FEIDMAN does not recall, in an effort to secure employment for FEIDMAN. Later the subject claimed to have an appointment with an important person that evening and arranged to meet with FEIDMAN later in the evening at the Statler Hotel in order to fly back to New York that same evening. FEIDMAN stated he went sight-seeing and saw no more of BROTHMAN until he met him according to their arrangement and they flew back to New York that night.

FEIDMAN stated BROTHMAN was unable to obtain employment for him at either Columbia University or the Bureau of the Navy. FEIDMAN further stated he believed subject wanted to assist him because of personal interest and that there were no other factors involved to his knowledge.

FEIDMAN stated he never saw or met HARRY GOLD and has no knowledge of any association between GOLD and the subject. He also said he has no personal knowledge of VAGO, MOSKOWITZ or the other members of BROTHMAN's company except that they all worked together in this small organization, and from the way they talked, appeared to be Communists or Communist sympathizers.

The following investigation was conducted by Special Agent PAUL F. DINSMORE:

Mr. WILLIAM S. BOWEN, Director of Research, Bowen Engineering Company, Station Road, North Branch, New Jersey, stated that files of his organization

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reflect that this company conducted a "test run" for Brothman Associates of Long Island City, New York, in February, 1946. BOWEN said the entire matter was handled by correspondence and that one ROBERT GERSON represented Brothman Associates. BOWEN stated the subject is not known to him or any of his employees.

Mr. HORACE STEVENS, 711 Lexington Avenue, Kenilworth, New Jersey, stated he met BROTHMAN once or twice while moving some machinery from Union, New Jersey, to the Ulster Chemical Company in Cliffwood, New Jersey, in September, 1949. STEVENS stated this work was performed under a contract.

Mr. RALPH STEVENS, who is the son of HORACE STEVENS mentioned above, stated that his company, which is engaged in moving machinery, had a contract with subject to move some machinery from Union, New Jersey to the Ulster Chemical Company at Cliffwood, New Jersey. RALPH STEVENS said the contract cost BROTHMAN \$700 to \$1,000 and was paid by check. He stated BROTHMAN directed the job and that he only met BROTHMAN two or three times. STEVENS further advised that he received a letter from Agrin, Lawson and Holland, Certified Public Accountants, 444 Madison Avenue, New York City, in October, 1950, requesting a statement as to his account with the Ulster Chemical Company. STEVENS stated he has no knowledge regarding activities of the subject and added that his files contained no correspondence from the subject.

Mr. SALVATORE PETRUZZELLA, 506 Downer Street, Westfield, New Jersey, stated he is one of several men who operate garbage collection trucks for the town of Westfield. He stated he does not know ABRAHAM BROTHMAN or MIRIAM MOSKOWITZ and stated he knows nothing of the Ulster Chemical Company.

Mr. FRANK J. COFFEY, 100 North Third Street, Metuchen, New Jersey, who was the owner of the General Equipment Company, Currier Avenue, Menlo Park, New Jersey, stated in October, 1949 he submitted a bid to the Ulster Chemical Company for installing lead linings in tanks. He was referred to ABRAHAM BROTHMAN by a Mr. AXELRODT of the Fibre Chemical Company, which is located in the same building as the Ulster Chemical Company. He stated he met the subject only once, that he does not know him, has no information as to the subject's activities and has had no correspondence with the subject.

The following investigation was conducted by Special Agent EUGENE C. JONES:

EDWARD GELB, President and Secretary, E. Gelb and Sons, Route 29, Union, New Jersey, stated that his company deals in used machinery such as steam kettles, tanks, boilers and laundry equipment.

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NK 100-33638

GELB stated that in June, 1949, he sold approximately \$2,000 worth of equipment to the Ulster Chemical Company, Clifwood, New Jersey. He stated the deal was mainly conducted through ABRAHAM BROTHMAN, who came to Union to inspect the equipment to be sold. GELB advised that his son, LAWRENCE GELB, spoke with BROTHMAN and ascertained that subject was the principal stockholder in the Ulster Chemical Company. The subject did not want this publicly known, however, since it might hurt his business as a consultant with other companies in competition with Ulster. GELB stated several contacts were made by telephone with BROTHMAN to subject's company in Long Island City.

GELB stated he had no dealings with MIRIAM MOSKOWITZ but stated that her father, SIGMUND MOSKOWITZ, who was associated with the Ulster Chemical Company, came to Union, New Jersey, to inspect the above machinery before its purchase. GELB said he had no knowledge of BROTHMAN's activities but was impressed by his engineering ability and general intelligence. GELB stated the Ulster Chemical Company still owes him part of the purchase price for his machinery and that subject advised him several months ago by telephone that he would pay the bill. He advised he has had no correspondence with the subject.

LAWRENCE GELB could furnish no information in addition to that above.

Miss SARAH MATLIN, 108 West 42d Street, Bayonne, New Jersey, stated she has not been in contact or communication with MIRIAM MOSKOWITZ for the past eighteen years and that she does not know ABRAHAM BROTHMAN except through his recent newspaper publicity. She stated that the MOSKOWITZ family formerly lived upstairs in the two-family house in which she presently resides but that the family moved when MIRIAM was 16 years old. She stated the MOSKOWITZ family lived there approximately eight years.

Mr. WILLIAM M. SMITH, 744 Broad Street, Newark, New Jersey, Room 1027, who is a salesman employed by the Selas Corporation of America, consulting and manufacturing gas engineers with main offices at Erie Avenue and D Street, Philadelphia, Pennsylvania, stated he was unable to recall the name of ABRAHAM BROTHMAN or MIRIAM MOSKOWITZ. He searched through the correspondence of his company and stated his files reflect no information on either individual. He also stated that, to his knowledge, he never had any business dealings with the Ulster Chemical Company, although he advised that the Ulster Company and Long Island City are both located in his sales territory.

The following investigation was conducted by Special Agent GERHARD P. HUNDT:

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Dr. JOSEPH W. PINCK, 142 Paulison Avenue, Passaic, New Jersey, who is a dentist, stated he does not know ABRAHAM BROTHMAN or MIRIAM MOSKOWITZ and was unable to locate either name in his files.

JOSEPH TAYLOR, a plumber, 344 Gregory Avenue, Passaic, New Jersey, stated he does not know anyone by the name of ABRAHAM BROTHMAN or MIRIAM MOSKOWITZ.

Mr. CHARLES MANGOLD, 167 Summit Circle, Little Ferry, New Jersey, stated that he knew subject by sight as a person who worked in the same building in which his company is located in Long Island. MANGOLD explained that he is a salesman with the Peacock Roll Leaf Company located at South Elmhurst, Long Island, New York. MANGOLD stated the only actual contact he ever had with the subject was two or more years ago at which time he gave BROTHMAN a lift in his car from his office at Long Island to 59th Street in Manhattan. MANGOLD stated he has not seen the subject since that time and has no knowledge of subject's activities. MANGOLD stated he does not know MIRIAM MOSKOWITZ. He further advised that since he spends most of his time on the road he does not have any occasion to become acquainted with persons working in the same building in which his company is located.

Mr. SIMON H. STRICKLER, a Certified Public Accountant with offices at 45 Church Street, Paterson, New Jersey, advised that, to the best of his recollection, he met the subject twice approximately four years ago and has not seen nor heard from subject since that time until he read of BROTHMAN's recent arrest. STRICKLER stated that in 1946 he and two other individuals started a business known as the Plastichrone Company and called upon BROTHMAN to help them with some chemical problems. STRICKLER had dinner with the subject at the Hotel New Yorker, where these problems were discussed. STRICKLER stated the venture was unsuccessful and that it collapsed. He advised that sometime later BROTHMAN tried to interest him in setting up a plant with a new process for making plastic sheets. STRICKLER discussed this matter with subject at the latter's office in Long Island but nothing came of it.

STRICKLER said that on both the above occasions the conversation centered around business problems and nothing else. STRICKLER recalled that on the occasion of his visit to BROTHMAN's office he saw MIRIAM MOSKOWITZ there but had no occasion to speak to her. He stated he knows nothing of the activities of subject or MOSKOWITZ.

The following investigation, where not otherwise indicated, was conducted by the writer:

Mr. W. F. HURLBURT, JR., Vice President and General Manager, Automatic Switch Company, 391 Lakeside Avenue, Orange, New Jersey, advised that

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this plant, which moved to its present address from New York State In October, 1947, manufactures electrical control equipment and solenoid valves. HURLBURT stated company files reflect that A. Brothman and Associates had an account with this company since June, 1946 which is described as poor paying. The account contains a stipulation that 50 per cent of the price of any sale to BROTHMAN should be collected in advance. These files also contain several orders for equipment suitable for use in various chemical processes, all of which were cancelled by BROTHMAN's company.

HURLBURT stated on February 20, 1950 subject's company ordered two one inch electrically operated valves at \$80.23 to be delivered to the Ulster Chemical Company, Cliffwood, New Jersey. These items were shipped February 28, 1950, and payment has not yet been received. HURLBURT said in an attempt to obtain payment the account was turned over to the Kaighn Company of Newark, New Jersey, a collection agency.

HURLBURT contacted Sales Manager ROBERT F. McCORMICK of the Automatic Switch Company, who advised that he does not know the subject. HURLBURT stated he does not know BROTHMAN and added that the salesman who handled BROTHMAN's account was probably TED HACKER, 1072 Pine Street, Union, New Jersey, who is presently in Schenectady, New York on company business. HURLBURT said HACKER probably does not know subject personally. HURLBURT stated his files contain no correspondence in BROTHMAN's handwriting.

GEORGE KAIGHN of the Kaighn Company, 786 Broad Street, Newark, New Jersey, which is a collection agency, advised that he does not know the subject. He examined his files and stated they reflect that his company attempted unsuccessfully to make collections from A. Brothman and Associates on behalf of the Automatic Switch Company of Orange, New Jersey in 1950. He stated his files contained no correspondence from BROTHMAN.

Mr. W. A. LeBEAU, Comptroller, Keuffel and Esser, 300 Adams Street, Hoboken, New Jersey, advised that this company engages in the manufacture and sale of drawing instruments, surveying instruments, slide rules, measuring tapes, engineering and drafting room equipment and in doing reproductions. He reviewed his company's correspondence files and advised that subject has had a small account with Keuffel and Esser since July, 1945, under the name A. Brothman and Associates, 114 East 32d Street, New York City, and 29-28 41st Avenue, Long Island City, New York. LeBEAU said records indicated this account is very small and from time to time the subject submitted drawings or sketchings for reproduction. Keuffel and Esser would then reproduce these drawings or sketchings as blueprints and return all of this material to the subject. LeBEAU said that no copies of this material are retained by the company and no record kept as to the contents of the material. LeBEAU said

NK 100-33638

that if BROTHMAN did not himself solicit the services of this company the account may have been handled through one of the company's New York offices located at 127 Fulton Street, the Lincoln Building at 60 East 42d Street, or at 2424 Jackson Avenue, Long Island City.

LeBEAU stated he does not know the subject and that, to his knowledge, no one else in the company knows him. He advised his files contained no correspondence from BROTHMAN. He displayed and furnished a letter dated February 15, 1950 from Keuffel and Esser to BROTHMAN's company regarding subject's delinquent account. At the bottom of instant letter in pen and ink appeared the following handwritten note:

"Dear Keuffel and Esser:

"We may neglect you at times, but not for long! Bill
paid through Jan. - \$39.96 - today.

"M. *Bakowits"

SAMUEL ZOLIN, President, Cooper Alloy Foundry Company, Eloy Street and Ramsey Street, Hillside, New Jersey, examined the entire list of employees of his company and stated he has no employee named C. A. Newgast or Newcast. Examination of his correspondence files reflects that the subject has no account with this company. ZOLIN stated he does not know the subject.

ZOLIN examined his mailing list and advised that a mailing address card containing the firm name A. Brothman and Associates, 29-28 - 41st Avenue, Long Island City, was received at Cooper Company November 2, 1950. ZOLIN stated this indicates that subject has in the recent past requested literature information regarding Cooper products and has been placed on the company's mailing list. He examined his files containing written letters of request to the company and advised they contain no letter of request written by subject or any member of his company. ZOLIN then said the subject probably extracted one of the Cooper Company advertisements from a trade magazine, attached his company's address and forwarded it to the Cooper Company. In that case it would have been placed on a stenciled list group for future mailing and the ad would have been disposed of.

The following investigation was conducted by Special Agent THOMAS M. O'CONNOR and the writer:

Mrs. GERTRUDE SCHWARTZMAN HANSEN, 1506 Owens Boulevard, New Orleans, Louisiana, was interviewed at the home of her parents, BENJAMIN and SOPHIE SCHWARTZMAN, 86 West 56th Street, Bayonne, New Jersey. Mrs. HANSEN stated

NK 100-33638

she lived at the latter address from 1947 to 1948, at which time she was married and moved to New Orleans. She stated she returned to her parents' home for a seven-week visit in 1949, returning to New Orleans on December 1, 1949. She stated she is currently visiting here in order to attend the marriage of her sister, SARAH SCHWARTZMAN.

Mrs. HANSEN advised that her family has resided at 86 West 56th Street, Bayonne, New Jersey, since 1947 and that those presently living here are her mother and father, SOPHIE and BENJAMIN SCHWARTZMAN; her brother, ABRAHAM SCHWARTZMAN; and her sister, SARAH SCHWARTZMAN SCHEINEMAN, who was recently married and is presently spending a ten-day honeymoon in Florida.

Mrs. HANSEN further advised that her younger brother, HY SCHWARTZMAN, who is married, occupies the first floor of this two-family house at 86 West 56th Street, Bayonne. Mrs. HANSEN said her parents have a telephone, Bayonne 7-8591, which was subscribed in her name (G. SCHWARTZMAN) when the family originally bought the house in 1947. Mrs. HANSEN stated this telephone listing has never been changed since 1947.

Both Mrs. HANSEN and her mother, SOPHIE SCHWARTZMAN, claimed that they never heard of the subject or MIRIAM MOSKOWITZ until they read of their recent arrest in the newspaper.

On November 4, 1950, Special Agent THOMAS M. O'CONNOR and the writer interviewed ABRAHAM, BENJAMIN and HY SCHWARTZMAN at their residence. All of them disclaimed any knowledge of the subject or MIRIAM MOSKOWITZ except for information which has recently appeared in the newspapers.

- REFERRED UPON COMPLETION TO THE OFFICE OF ORIGIN -

ADMINISTRATIVE

Special Agent ORIAN R. KENNEDY ascertained that JEROME KLINE presently resides in Philadelphia, Pennsylvania, telephone Ardmore 7768-W instead of in Camden, New Jersey, as previously reported. A teletype was sent to Philadelphia November 2, 1950, requesting his interview.

Bureau Teletype October 23, 1950 instructed Newark to recontact JEAN NIEMASECK to determine whether she has located notes and material given her at the time of the GOLD - BROTHMAN meetings, as set forth in report of Special Agent BLAKE E. TURNER, Newark, July 3, 1950. By teletype October 26, 1950, the Bureau and New York were advised that NIEMASECK was unable to locate instant material and believes it to have been destroyed or discarded in view of the lapse of time and her failure to locate it.

New York teletype October 27, 1950 requested Newark to advise NIEMASECK that the United States Attorney for the Southern District of New York was considering her use as a witness at subject's trial on November 13, 1950, and requested photographs of NIEMASECK taken in approximately 1942.

Newark teletype to Bureau and New York October 28, 1950 advised that Mrs. NIEMASECK had been so advised and by letter of November 1, 1950 two photographs of NIEMASECK were forwarded to New York for appropriate use and return.

Referenced New York teletype October 31, 1950 requested Newark check indices on ABRAHAM SCHWARTZMAN and GERTRUDE SCHWARTZMAN and then request Bureau authority to interview them regarding their knowledge of Communist Party or espionage activities of the subject and MOSKOWITZ. Bureau teletype November 1, 1950 authorized interview of BENJAMIN and GERTRUDE SCHWARTZMAN.

It will be noted that all individuals interviewed herein were described in referenced teletypes as known associates or contacts or as concerns or individuals who sent communications to BROTHMAN since August 15, 1950.

Mrs. GERTRUDE SCHWARTZMAN HANSEN advised that her husband is presently employed in New Orleans in the marine refrigeration industry. It will be noted her address in New Orleans is 1506 Owens Boulevard.

ADMINISTRATIVE (Cont'd)

It was noted that in the interview with SIDNEY M. FELDMAN he stated that the main group of those employed at A. Brothman and Associates appeared to be "Red inclined." FELDMAN also stated that from the way they talked BROTHMAN and his associates appeared to be Communists or Communist sympathizers. FELDMAN was unable to furnish any specific information as to why he received this impression other than the fact that through conversation with BROTHMAN and his associates they appeared to favor the Communistic viewpoint. FELDMAN also stated that BROTHMAN and VAGO read the Daily Worker and took the viewpoint of that newspaper. He stated that his impressions that these people were Communists or Communist sympathizers were based on conversation and that he had no other reason for his opinions.

REFERENCES:

Bureau teletype to Newark and New York, 10/23/50.
 New York teletype to Bureau and Newark, 10/27/50.
 New York teletype to Newark, 10/28/50.
 New York teletype to Bureau, Chicago, Philadelphia, Boston and Newark, 10/31/50.
 New York teletype to Bureau and Newark, 10/31/50.
 Bureau teletype to Newark, 11/1/50.
 Newark teletype to Bureau, New York and Philadelphia, 11/2/50.

U. S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

NOV 4 1950

TELETYPE

WASHINGTON 19 NEW YORK 5 FROM PHILA
DIRECTOR AND SAC.....DEFERRED

11-4-50

Mr. Tolson	_____
Mr. Ladd	_____
Mr. Clegg	_____
Mr. Glavin	_____
Mr. Nichols	_____
Mr. Rosen	_____
Mr. Tracy	_____
Mr. Harbo	_____
Mr. Belmont	_____
Mr. Mohr	_____
Tele. Room	_____
Mr. Nease	_____
Miss Gandy	_____

ABRAHAM BROTHMAN, WAS., ESPIONAGE - R. AS REQUESTED BY NEW YORK,
SA ROBERT G. JENSEN WILL DELIVER REMAINING MATERIAL OBTAINED FROM
SEARCH HARRY GOLD-S RESIDENCE TOGETHER WITH PERTINENT DESCRIPTIVE
MEMORANDA TO NYO ON MORNING OF NOVEMBER SIX.

ALL INFORMATION CONTAINED RECORDED - 45
HEREIN IS UNCLASSIFIED
DATE 4/6/87 BY 3042 PWT/INDEXED - 45
CORNELIUS

NY ACK AND DISC..... WA HOLD....

NY PH R-5 NYC EM

100-365040-369

NOV 7 1950

FILE

cc m. [Signature]

G. I. R. -7

59 NOV 16 1950

OCTOBER 31, 1950

SAC, NEW YORK

ABRAHAM BROTHMAN, WAS, MIRIAM MOSKOWITZ, ESP-R. REURTEL OCTOBER TWENTYFOUR.
PATENT NUMBER TWO TWO ONE TWO TWO SIX ONE REVIEWED IN LABORATORY. EXPERT
OPINION IS THAT PATENT IS NOT TOO TECHNICAL FOR AVERAGE LAYMAN TO UNDERSTAND
IT, WHEN PROPERLY EXPLAINED. ADVISE AUSA FULLY OF ABOVE FACTS AND ADVISE
BUREAU WHETHER ANY TESTIMONY DESIRED FROM LABORATORY EXPERT RE PATENT.

MOORE

JWA:REG

meg

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DATE 4/6/87 BY 3042 PNT/IMW

G. I. R. -7

RECEIVED READING ROOM
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RECORDED

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NOV 2 1950

Tolson _____
Ladd _____
Clegg _____
Glavin _____
Nichols _____
Rosen _____
Tracy _____
Harbo _____
Belmont _____

FEDERAL BUREAU OF INVESTIGATION
U. S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

OCT 31 1950

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FEDERAL BUREAU OF INVESTIGATION
U. S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

Mr. Tolson	
Mr. Ladd	
Mr. Clegg	
Mr. Glavin	
Mr. Nichols	
Mr. Rosen	
Mr. Tracy	
Mr. Harbo	
Mr. Belmont	
Mr. Mohr	
Tele. Room	
Mr. Nease	
Mr. Gandy	

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DATE 4/6/87 BY SP4 PNT/lmw/TELETYPE

OCT 30 1950

WASH 14 AND NEW YORK 6 FROM NEWARK

DIRECTOR AND SAC

U R G E N T

ABRAHAM BROTHMAN, WAS, ESP - R. RENYTEL OCTOBER TWENTY EIGHT LAST
SIDNEY M. ~~X~~FELDMAN, FIVE FIVE FIVE ALDEN DRIVE, RAHWAY, N. J., EMPLOYED
AS CHEMICAL ENGINEER AT MERCK & CO., RAHWAY, N. J., SINCE NINETEEN
FORTY ONE AND GRADUATED CCNY JUNE FORTY ONE. FIRST MET BROTHMAN IN
FORTY ONE THROUGH ARTHUR ~~X~~WEBER, A FELLOW STUDENT WHO WAS EMPLOYED BY
SUBJECT AS DESIGN ENGINEER. WEBER NOW WITH INTERNATIONAL EQUIPMENT OR
MIXING CO. AT CLEVELAND OR DAYTON, OHIO. IN FORTY FOUR, SUB PHONED
FELDMAN AT MERCK AND OFFERED HIM PART TIME EMPLOYMENT AS DESIGN
ENGINEER. AT THIS TIME, SUB AND WEBER WERE EMPLOYED AT CHEMURGY DESIGN
CORP AT GRAYBAR BUILDING, NYC, WHICH CO WAS ENGAGED IN DOING CONSULTING
WORK FOR TEDLEE & REGAL CHEMICAL CO. OF BROOKLYN. LATTER MANUFACTURED
SPRAYS, INSECTICIDES AND WORKED ON AEROSOL. SUB HIRED FELDMAN EARLY
FORTY FOUR TO DO DESIGN WORK ON AEROSOL BOMB, PACKAGING METHODS AND
LABORATORIES FOR FUTURE PRODUCTION OF DDT. FELDMAN WORKED ON PART TIME
BASIS THREE NIGHTS A WEEK AND SATURDAYS AT FIFTY DOLLARS PER WEEK
MEANWHILE RETAINING JOB AT MERCK. SHORTLY THEREAFTER, SUB SPLIT
WITH WEBER AND GOLWYNNE WHO WAS HEAD OF CHEMURGY CORP., AND SUB FORMED
ABE BROTHMAN AND ASSOCIATES AT ONE ONE FOUR EAST THIRTY SECOND STREET,
NYC. MEMBERS OF ASSOCIATES INCLUDED OSCAR VAGO NOVITZ, EMIL
BARISH, MIRIAM ~~X~~MOSKOWITZ, SECRETARY, SY ~~X~~MANDELCORN AND FNU ~~X~~BIBBS,
A NEGRO CHEMIST. AN INDIVIDUAL NAMED JULES ~~X~~KORSHEIN USED FACILITIES OF
SUB-S OFFICE BUT WAS NOT A MEMBER OF THE COMPANY. FELDMAN WORKED ON
TEDLEE PROJECT ON PART TIME BASIS UNTIL SEPTEMBER FORTY FOUR WHEN

RECORDED - 45

INDEXED 145

100-365040-371

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PAGE TWO

PNEUMONIA FORCED HIM OUT OF EMPLOYMENT UNTIL DECEMBER. FELDMAN RETURNED TO MERCK ON DECEMBER ONE FORTY FIVE AND RETURNED TO SEE SUB IN EARLY PART OF FORTY FIVE. SUB WAS THEN ENGAGED IN WRITING A CHEMICAL ENGINEERING HANDBOOK. FELDMAN AND MANDELKORN ASSISTED HIM IN WRITING THIS BOOK AND THEN FELDMAN AND WOLLON HELPED BROTHMAN WRITE AND PUBLISH TWO ARTICLES ON MIXING METHODS WHICH APPEARED IN APRIL AND MAY FORTY FIVE ISSUES OF CHEMISTRY AND METALLURGY ENGINEERING MAGAZINE, NOW KNOWN AS CHEMISTRY-ENGINEERING. TOWARD END OF FORTY FIVE, FELDMAN DRIFTED AWAY FROM SUB SINCE LATTER WAS NOT BUSY AND HAD NO FURTHER USE FOR FELDMAN-S SERVICES. HAS HAD NO PERSONAL CONTACT WITH BROTHMAN SINCE THAT TIME EXCEPT POSSIBLY ONE OR TWO PHONE CALLS TO EXCHANGE GREETINGS. NO CONTACT SINCE SUB-S ARREST. FROM WAY SUB TALKED, FELDMAN ASSUMED HE WAS CP MEMBER OR SYMPATHIZER AS WELL AS VAGO, WOLLON AND MOSKOWITZ. HAD NO KNOWLEDGE THEIR OUTSIDE ACTIVITIES SINCE FELDMAN RESIDED ELIZABETH, N. J. AT THAT TIME. SAW NO INDICATION THEY WERE EVER ENGAGED IN ESPIONAGE OR RELATED ACTIVITY. FELDMAN WAS INTERESTED IN BROTHMAN ONLY FROM STANDPOINT OF IMPROVING HIS OWN TECHNICAL ENGINEERING KNOWLEDGE AND CHANCE TO GET HIS NAME IN PRINT THROUGH PUBLICATIONS AND ARTICLES. DECLINED FULL TIME EMPLOYMENT WITH SUB BECAUSE SUB-S COMPANY WAS SMALL, MOST OF HIS GROUP SEEMED RED INCLINED AND FELDMAN-S JOB AT MERCK KEPT IMPROVING. WHILE WORKING WITH BROTHMAN AT TEDLEE CO., FELDMAN RECEIVED HIS WEEKLY SALARY CHECK DIRECT FROM TEDLEE, SPENT THREE NIGHTS PER WEEK AT WORK IN SUB-S OFFICE ON THIRTY SECOND ST., AND SPENT SATURDAYS IN TECHNICAL CONFERENCE WITH STAFF AT TEDLEE OFFICES IN BROOKLYN, HEADED BY SEILIG

END OF PAGE TWO

PAGE TWO

OR SIELIG, FNU. IN FORTY FOUR OR FIVE WHEN FELDMAN WAS CLASSIFIED ONE
A IN DRAFT, BROTHMAN CLAIMED HE WAS DOING MATH WORK AT COLUMBIA UNIVER-
SITY IN CONNECTION WITH SOME SECRET PROJECT AND OFFERED TO HELP PLACE
FELDMAN IN EITHER THAT WORK, OR SOME OTHER EMPLOYMENT WHICH WOULD ASSURE
HIS DEFERMENT. IN SPRING FORTY FOUR OR FIVE, SUB AND FELDMAN FLEW TO
WASHINGTON, AT SUB-S SUGGESTION, WHERE BROTHMAN ATTEMPTED OBTAIN EMPLOY-
MENT FOR FELDMAN IN BUREAU OF THE NAVY. SUB TOOK FELDMAN TO NAVY
BUILDING AND LEFT HIM OUTSIDE. BROTHMAN ENTERED AND WHEN HE EMERGED,
CLAIMED TO HAVE TALKED TO A FAMOUS MATHEMATICIAN, NAME NOT RECALLED,
IN EFFORT TO SECURE EMPLOYMENT FOR FELDMAN. SUB CLAIMED TO HAVE APPOINT-
MENT WITH IMPORTANT PERSON THAT EVENING SO FELDMAN WENT SIGHTSEEING,
MET SUB AT STATLER HOTEL LATER IN THE EVENING BY ARRANGEMENT, AND BOTH
RETURNED BY PLANE TO NEW YORK THAT SAME NIGHT. BROTHMAN UNABLE TO OBTAIN
EMPLOYMENT FOR FELDMAN AT EITHER COLUMBIA OR BUREAU OF NAVY. FELDMAN
BELIEVES SUB DID THIS ONLY THROUGH PERSONAL INTEREST IN FELDMAN.
NO OTHER FACTORS INVOLVED TO HIS KNOWLEDGE. FELDMAN NEVER SAW OR MET
HARRY GOLD AND HAS NO KNOWLEDGE OF ASSOCIATION BETWEEN GOLD AND BROTHMAN.
HAS NO PERSONAL KNOWLEDGE OF VAGO, MOSKOWITZ OR OTHER MEMBERS OF BROTHMAN
ASSOCIATES EXCEPT THEY ALL WORKED TOGETHER IN THIS SMALL ORGANIZATION
AND APPEARED TO BE COMMUNISTS OR SYMPATHIZERS, FROM WAY THEY TALKED.
FELDMAN WORKED FOR BROTHMAN WITHOUT PAY WHEN HE RETURNED AFTER HIS SICK-
NESS, CONSIDERS BROTHMAN A BRILLIANT ENGINEER AND WAS DUMBFOUNDED TO
HEAR OF HIS ARREST.

MC KEE

END

WA NK R 14 WA FEJ

cc: Mr Langhorne

FEDERAL BUREAU OF INVESTIGATION
U. S. DEPARTMENT OF JUSTICE
COMMUNICATIONS SECTION

OCT 31 1950

TELETYPE

Mr. Tolson	_____
Mr. Ladd	_____
Mr. Clegg	_____
Mr. Glavin	_____
Mr. Nichols	_____
Mr. Rosen	_____
Mr. Tracy	_____
Mr. Harbo	_____
Mr. Belmont	_____
Mr. Mohr	_____
Tele. Room	_____
Mr. Nease	_____
Miss Gandy	_____

WASHINGTON FROM NEW YORK 78 31 11-11 P

DIRECTOR URGENT

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DATE 4/7/83 BY 3040PWT/1MW

ABRAHAM BROTHMAN, ESPIONAGE R. NY ENDEAVORING TO IDENTIFY AN
UNKNOWN INDIVIDUAL CALLED MILLY, WHO IS APPARENTLY A COMMUNIST
PARTY OFFICIAL AND WITH WHOM MARIAN MOSKOWITZ WAS QUITE FRIENDLY.
UNKNOWN MILLY IS NOT IDENTICAL WITH MILLICENT GERSON LESSER. UNKNOWN
MILLY IS APPARENTLY KNOWN TO GERHARD NORVAL WOLLAN, AS CONFIDENTIAL
INFORMANT ADVISED THAT ON [REDACTED] b7D

ATLANTA

REQUESTED TO INTERVIEW WOLLAN AT UNIVERSITY OF GEORGIA, ATHENS,
GEORGIA, RE IDENTITY OF UNKNOWN MILLY. INTERVIEW SHOULD BE CONDUCTED
IN MANNER THAT WILL NOT DISCLOSE IDENTITY OF INFORMANT. SUTEL. G.I.R.-7

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INDEXED - 45

NOV 2 1950

ATLANTA ADVISED

ADAND HOLD PLS

NYC R -78 WA

R LRP

59 NOV 17 1950

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88 MAR 5 1963

cc: Mr. Lamphere

Seen Switzerland
Oct 26, 1950

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Winter DATE 4/4/82 BY 5042 PWT/IMW
F.B.I.

Re: Abraham^① Brothman, was., et al,
Espionage - R.

Dear Sir;
Remy cable 10/26/50.

Attached are photostatic & certified copies
of the hotel registrations of the subjects in
this case. Details regarding these registrations
have already been forwarded to the Bureau
by reference cable. A fuller report follows
from London.

Since the trial of this case starts 10/20/50,
the attached documents are being mailed from
here in order to save time.

ENCLOSURE ATTACHED

7-33

ENCL.

1cc Hotel Schenck
to Dinkelgrau

Very truly yours
J. D. Dimpson
Legal Attache (London)

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34

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100-370679-23

Hotel Schweizerhof

14/16

Name	BRETHMAN	Vorname	ABRAHAM
Nachname		Prénom	
Familienname		Christian-nom	
Geburtsdatum	1912	Nationalität	AMERICAN
Date de naissance		Nationalité	
Date of birth		Nationality	
Beruf	ENGINEER	Kommt von	NEW YORK
Profession		Vient de	
Profession		Coming from	
Strassen Wohnadresse	41-DE 12 ST, LONG ISLAND CITY, N.Y.		
Domicile habituel			
Permanent address			
Datum der Ankunft	27/11/49	Personen	2
Date de l'arrivée		Nombre de personnes	
Date of arrival		Number of persons	
Unterschrift	Abraham Brethman		
Signature			
Signature			

Von hier abgehend und zurücksenden

Hotel Schweizerhof

16

Name	BRETHMAN	Vorname	ABRAHAM
Nachname		Prénom	
Familienname		Christian-nom	
Geburtsdatum	Aug. 15, 1912	Nationalität	AMERICAN
Date de naissance		Nationalité	
Date of birth		Nationality	
Beruf	ENGINEER	Kommt von	AMERICA
Profession		Vient de	
Profession		Coming from	
Strassen Wohnadresse	41-DE 12 ST, LONG ISLAND CITY, N.Y.		
Domicile habituel			
Permanent address			
Datum der Ankunft	27/11/49	Personen	2
Date de l'arrivée		Nombre de personnes	
Date of arrival		Number of persons	
Unterschrift	Abraham Brethman		
Signature			
Signature			

Hotel Schweizerhof

5/6

Name	BRETHMAN	Vorname	ABRAHAM
Nachname		Prénom	
Familienname		Christian-nom	
Geburtsdatum	Aug 15, 1912	Nationalität	AMERICAN
Date de naissance		Nationalité	
Date of birth		Nationality	
Beruf	ENGINEER	Kommt von	U.S.A.
Profession		Vient de	
Profession		Coming from	
Strassen Wohnadresse	41-DE 12 ST, L.I.C. N.Y.		
Domicile habituel			
Permanent address			
Datum der Ankunft	27/11/49	Personen	2
Date de l'arrivée		Nombre de personnes	
Date of arrival		Number of persons	
Unterschrift	Abraham Brethman		
Signature			
Signature			

EASTON
LUSSEN

Antilcher Anmeldechein
Bulletin d'arrivée officiel

Nº 030207

You must always provide, voluntarily and honestly, information concerning your identity and your activities in the United States, in order to assist the United States in its efforts to maintain its security and integrity. - False statements are subject to punishment.

Hotel Park-Hotel, Vitznau

3/20/48

74

BRATHMAN

ABRAHAM

ENGINEER

AMERICAN

4642 St.

ES

NEW YORK, U.S.A.
New York City

ALL INFORMATION CONTAINED

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DATE 4/6/83 BY 3042 PNT/IMW

WASHINGTON AND NEW YORK FROM WASH FIELD

DIRECTOR AND SAC

ABRAHAM BROTHMAN, WAS. PATENT #2,201,261, WAS. RECORDED UNDER

NEW YORK TELETYPE TO WASHINGTON FIELD OCTOBER TWO NINE LAST. PRINTED

COPY PATENT NUMBER TWO TWO ONE TWO TWO SIX ONE ISSUED AUGUST TWO

AUGUST, ONE NINE FOUR EIGHT, TO A. BROTHMAN FOR TURBINE TYPE MIXER

SECURED DELIVERED TO LABORATORY NO. 12, AS W. KAISER, CHIEF

ADMINISTRATIVE SECTION, UNITED STATES PATENT OFFICE, ADVISED CERTIFIED

COPIES OF THIS PATENT ALONG WITH CERTIFIED COPY OF GRANT CAN BE

SECURED PATENT OFFICE UPON REQUEST OF BUREAU. HE ADVISED FEDERAL

COURTS WILL TAKE JUDICIAL NOTICE OF THE CERTIFIED COPIES. THE

ORIGINAL PATENT DESIRED AS EVIDENCE SUBPOENA SHOULD BE DIRECTED

COMMISSIONER OF PATENTS, UNITED STATES PATENT OFFICE, DEPARTMENT

OF COMMERCE, WASHINGTON, D.C. IF CERTIFIED COPIES DESIRED SUTEL

BUREAU REQUESTED DISBURSED WHO LEAD TO SECURE COPIES. COPY OF LETTER

TO THE BUREAU RE: THIS MATTER BEING SENT SPECIAL DELIVERY NEW YORK

TODAY. JOSEPH ZACK REPORTER STATES CANNOT POSITIVELY IDENTIFY

ONE NINE THREE THREE PHOTOGRAPH AS ABRAHAM BROTHMAN AS ONE OF THOSE

CHEMISTS ORGANIZED TO CONDUCT RESEARCH FOR COMMUNISTS. PARTY AROUND

ONE NINE THREE TWO

RECORDED 112 NOV 17 1950

HOTTEL

REVO

100-21170

52 NOV 15 1950

United Laboratory

W. H. Harkins & Co.

AP

Aug. 20, 1940.

A. BROTHMAN

2,212,261

TURBINE TYPE MIXER

Filed June 2, 1939

2 Sheets-Sheet 1

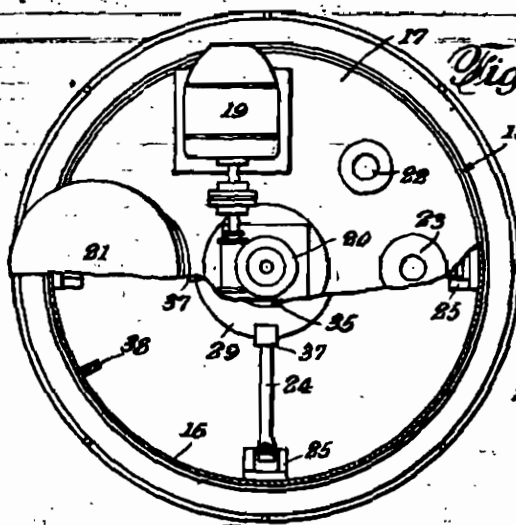


Fig. 1.

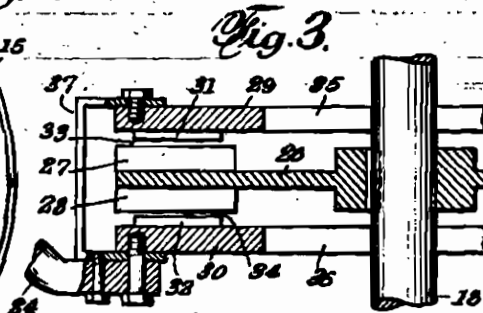


Fig. 3.

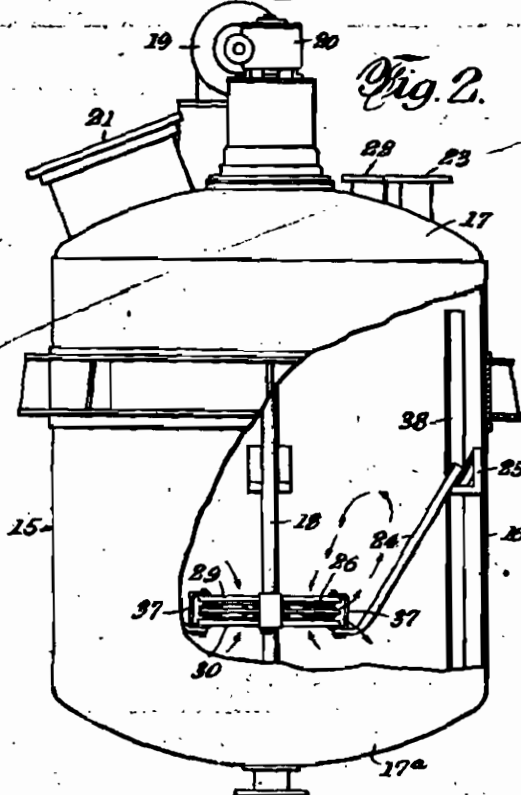


Fig. 2.

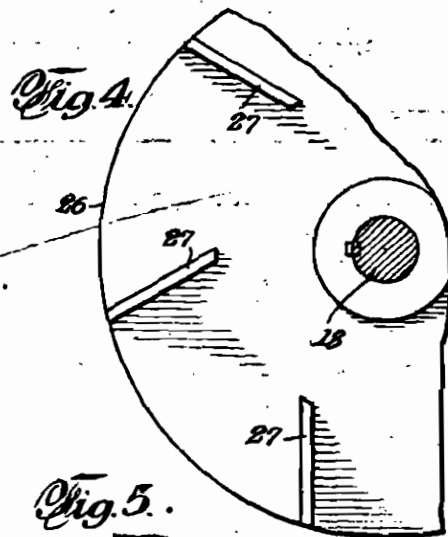


Fig. 4.

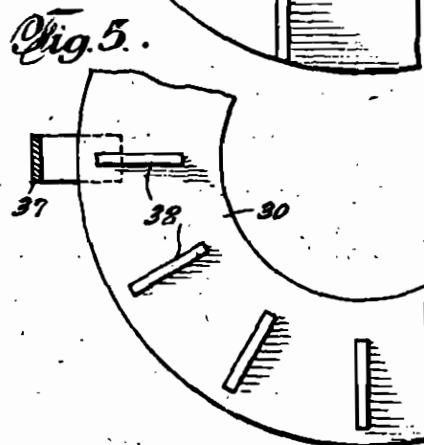


Fig. 5.

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DATE 4/6/87 BY 3045PNT/1mw

INVENTOR
ABRAHAM BROTHMAN

BY

Hyman J. Kwan
ATTORNEY

100-365040-374

ENCLOSURE

Aug. 20, 1940.

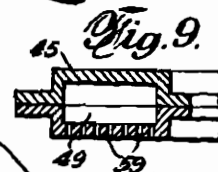
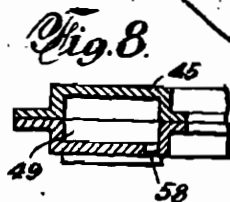
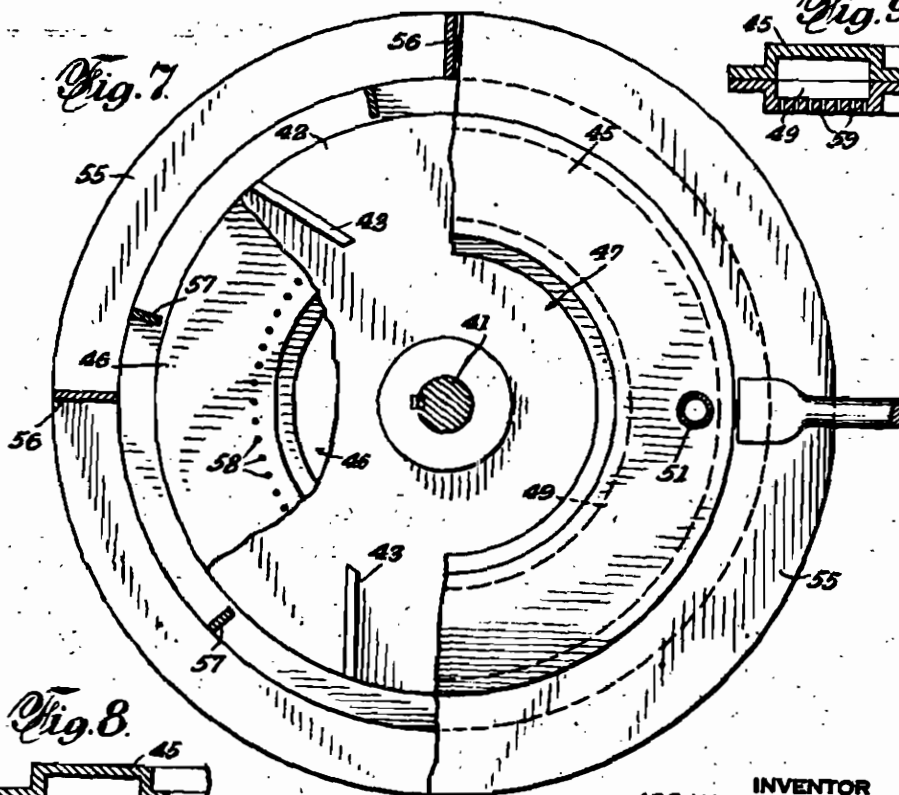
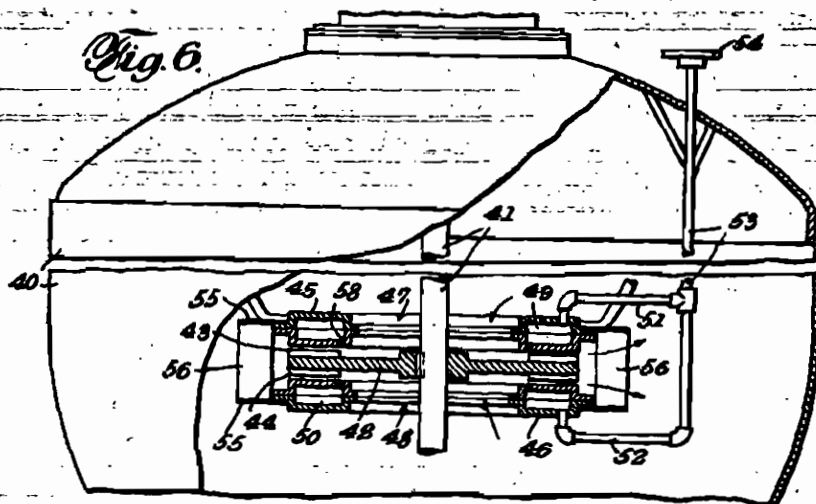
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TURBINE TYPE MIXER

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2 Sheets-Sheet 2



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TURBINE TYPE MIXER

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5 Claims. (Cl. 259-96)

The present invention relates to mixers and more particularly to mixers having a turbine action for the intermixing of liquids and liquids, liquids and gases, or liquids and solids, while circulating the same in a kettle or the like.

The invention seeks to provide a mixer of the type indicated wherein an intimate direct shearing action is obtained in the particles of a mass passing through the mixer.

10 The invention further contemplates the provision of means for introducing reactants, solvents, etc., into the mass being mixed at the point of mechanical shearing of the particles of said mass and thereby obviating localized over-concentration of the material being introduced.

Another object of the invention is to provide a mixer wherein a greater area of contact between gas and liquid, or liquid and liquid phases are obtained during the aforementioned shearing action.

20 The invention as herein contemplated, and which will be more fully described in the following specification, is designed to give several advantageous operation phases.

25 The instant design provides for direct or mechanical shearing in addition to the agitation or indirect shearing obtained by the circulation of the mass of material in a container or kettle. A pumping action of the mixer is afforded by providing a limited inlet to the rotor or impeller of the mixer. This insures a more intimate and longer contact of the mass of materials with the mixer, a feature not obtained in multi-blade paddles as heretofore used. The rotor of the mixer is of such design as to allow for greater linear speeds and hence greater pumping capacities. "Floating pockets" in the mass are obviated due to the forced flow through a restricted impeller inlet. In this manner a better heat transfer is obtained. The device is designed to provide for the injection or introduction of a gas or liquid at the point of most intense mixing action to make possible continuous mixing in a small container or kettle.

45 The features outlined in the preceding paragraphs may be obtained with the following principles of operation:

50 Shearing between rotor blades and stator ridges or ribs provide for the mechanical shearing above-mentioned. A limited or restricted inlet to the impeller insures to each particle of the circulated mass, a uniform movement of travel. The provision of stationary radial elements to tangentially deflect the mass after passing through the mixer, acts to retard the flow of ma-

terial through the mixer and thus to increase its efficiency. The provision of holes or apertures in the stator portions of the mixer for the introduction therethrough of reactants, blenders, etc., at the points of highest velocity flow, causes a wiping and spatula action of the mass passing through the mixer and past the mentioned apertures. The present design lends itself to being arranged in units positioned one above the other so multi-turbine effects may be obtained. Providing encircling screens or cages around the mixer would serve to hold up the charge in said mixer to increase the amount of shearing of the mass therein.

The apparatus as herein contemplated, may be used as a continuous mixer in sulphonation and nitration. It may be used in flue gas absorption and in the distribution of CO_2 in resin kettles. The mixer may be used for hydrogenation and oxidation at atmosphere or at greater pressures, and in "blowing" of asphalt and the "blowing" of linseed oil and other oils at atmosphere, at greater pressures, and at all temperatures. The device may be used in blending operations, thinning operations, in the manufacture of suspensions, in emulsifications, for gas scrubbing, in the acid treatment of petroleum and lubricating oils, in the continuous NaOH refinement of vegetable oils, etc.

In carrying out the invention it is, of course, too cumbersome to illustrate and describe the various changes and arrangements which may be made in the apparatus for each of the foregoing types of operation. The instant disclosure is intended as exemplary of apparatus for the herein mentioned purpose, the following detailed specifications thereof being based on the accompanying drawings, in which exemplary forms of mixers have been illustrated.

In the drawings:

Fig. 1 is a plan view, partly in cross section, of a kettle in which is provided a turbine type mixer as herein contemplated.

Fig. 2 is an elevational view thereof, the kettle being broken away to expose to view a mixer of instant design.

Fig. 3 is an enlarged vertical sectional view, partly broken away, of a mixer such as shown in Fig. 2.

Fig. 4 is a fragmentary plan view of the rotor of the mixer shown in Fig. 3.

Fig. 5 is a similar view of one of the stator members thereof.

Fig. 6 is a front elevational view partly broken away and partly in cross section, of a kettle hav-

ing a mixer therein of alternate design, connections being shown for introducing material at the shearing points of said mixer.

Fig. 7 is a top plan view, broken in successive stages, of the mixer shown in Fig. 6.

Fig. 8 is a fragmentary sectional view indicating the intimate detail of one of the stator members of the mixer shown in Figs. 6 and 7.

Fig. 9 is a similar view of an alternate form of stator.

In that practical embodiment of the invention illustrated in Figs. 1 to 5 inclusive, the kettle 18 is shown as comprising a cylindrical shell 18 and dished top and bottom portions respectively 17 and 17a. Vertically disposed in the kettle there is provided a shaft 19 driven by means such as the motor 19 through reduction gearing 20 supported at the top of the kettle.

In the usual manner the kettle may be provided with a manhole 21, a charging connection 22, and a reflux connection 23.

The turbine type mixer herein contemplated, is preferably positioned below the middle of the kettle and supported in this position as by means of rods 24 or the like, carried by supports 25 affixed to the inner wall of the kettle. The position of the mixer in the kettle may vary, however, and may be determined by the pumping capacity of the rotor, the viscosity of the material being agitated, and the intermediate changes in the consistency of the mass.

Referring now more particularly to Figs. 3, 4, and 5, upon the shaft 19 there is provided a rotor member 26 on both upper and under faces of which are preferably set the blades 27 and 28 respectively. These blades, as shown in Fig. 4, are disposed tangentially to a circle of smaller diameter than the outer periphery of the rotor 26.

The mixer also includes the respective upper and lower stator rings 29 and 30, each being formed with ribs or ridges respectively 31 and 32, directed toward the respective blades 27 and 28. The ribs 31 and 32 are preferably radially arranged as shown in Fig. 5. The stator rings are so arranged in relation to the rotor 26 as to provide the gaps 33 and 34 between the respective blades and ribs. The stator members are preferably formed as rings to provide central inlet openings 35 and 36, the outlet of the mixer being in the present instance, unrestricted.

The aforementioned rods 24 serve to support the spaced brackets 37, said brackets serving to hold the stator rings in the aforementioned spaced relation.

Because of the angular disposition of the blades 27 and 28 in relation to the respective ribs 31 and 32, a direct shearing of material passing between said blades in the gaps 33 and 34, is obtained. Fig. 2 shows in a general way, by means of arrows, the type of flow obtained in the mass during rotation of the rotor 26. Material is sucked downwardly through the opening 35 and upwardly through the opening 36 and by centrifugal force directed past the respective blades of the rotor and ribs of the stator to be mechanically sheared and then forced to the outer periphery of the mixer and into the mass of materials in the kettle. There is thus established a circulation of the mass of materials wherein in a quite short period all of the materials within the kettle are thoroughly intermixed first by the aforementioned mechanical shearing and second by the friction among the particles in the mass as said mass is being agitated.

To further enhance the friction in the mass

deflector blades such as 38 may be provided on the inner wall of the kettle to retard swirling of the mass during agitation thereof.

It is evident from the above that a highly efficient mixer for the purpose previously set forth has been obtained; that all the parts thereof are of such design as to be inherently strong; that the peripheral speed of the rotor has been utilized to obtain a highly efficient operation—one which was not obtainable by the usual type of paddle or turbine mixer where the material in the kettle could not maintain uniform contact with the paddles; and that the confinement of the rotor between superposed stator members guides the material into such intimate contact with the blades and ribs that a highly efficient mechanical shearing of the mass is obtained.

In that form of the invention shown in Figs. 6 to 9, the kettle 40 has mounted therein the vertical shaft 41 which may be rotated in a manner as above described. Upon the shaft 41 is carried a rotor 42 having blades 43 and 44. This rotor is substantially similar to the one previously described.

In this form of the invention the stator members 45 and 46 are also ring-shaped and provided with inlet openings 47 and 48.

The stators 45 and 46 are each shown as having a respective chamber 49 and 50 and piping connections 51 and 52 to a vertical pipe 53 having a flange 54 above the top of the kettle for connection to a supply of a gas or a liquid.

Each of the stator rings, at its outer periphery, serves to support rings 55 between which are disposed a plurality of vertically disposed baffles 56. In staggered relation to the baffles 56 there are also arranged another series of baffles 57. The latter may be termed primary baffles and the former, secondary baffles.

With particular reference to Figs. 7 and 8, it will be noted that each of the chambered stator rings 45 and 46 are provided as at 58 with a series, or as shown at 59 of Fig. 9, with a plurality of series, of holes or apertures of relatively small dimension. These apertures 59 or 58 communicate the chambers 49 and 50 with the gap or space between the blades 43 and 44 and the respective stator members.

As shown in Fig. 8, the hollow stators may also be provided with ribs for shearing association with the shear blades 43 and 44, the viscosity of the mass being agitated, determining the desirability of using the ribs and also determining the height of the ribs and blades.

Thus it may be seen that during the agitation and mixing of materials and the shearing thereof, a gas such as air or CO₂ or other gases, or a suitable liquid or finely divided solid may be introduced through the pipe 53 and thus into the chambers 49 and 50 to pass through the apertures 59 into the mentioned area of shearing between the rotor and the stators. In this manner the material passing through pipe 53 may be introduced into the mass in small but continuous quantities to insure a uniform distribution therein.

The primary deflectors 57 and also the secondary deflectors 56 serve to minimize swirling of the mass and also serve to obtain a more intimate incorporation of the material passing through the mixer and into the remaining mass of materials by retarding the flow of material as it leaves the mixer. The rings 55 serve to confine the material flowing from the mixer to enhance the ac-

While only two forms of the mixer have been disclosed, it is obvious that the design thereof could be varied to suit the different conditions outlined in the preamble of this specification, and it is intended that the invention as claimed should have a broader basis of interpretation than on the present specific disclosure.

What I claim as new and desire to secure by Letters Patent, is:

- 10 1. A mixer comprising a rotor, shear blades on said rotor, a stator member disposed to each side of said rotor and each having a surface in shearing relation with said shear blades, said stator members each having a chamber and each provided with perforations communicating said chamber with the shearing points of the mixer, and means for conducting a fluid to said chambers.
- 15 2. A mixer of the character described comprising a rotor having shear blades, a stator at each side of the rotor and each having a surface in shearing relation with said shear blades, each stator being formed with a central inlet opening for the passage therethrough of a fluid mass entering the mixer, and deflector baffles positioned beyond the outer periphery of said rotor for deflecting the fluid mass leaving the mixer, said baffles being fixed and arranged in plural concentric series.
- 20 3. A mixer of the character described comprising a rotor having shear blades, a stator at each side of the rotor and each having a surface in shearing relation with said shear blades, each

stator being formed with a central inlet opening for the passage therethrough of a fluid mass entering the mixer, and deflector baffles positioned beyond the outer periphery of said rotor for deflecting the fluid mass leaving the mixer, said baffles being carried by said stators and arranged in plural concentric series.

4. A device of the character described comprising a pair of hollow stator members having apertured faces directed towards each other, shear ribs on said faces, a rotor positioned between said stator members and having blades in shearing relation with said shear ribs respectively, and means connected to said stator members for conducting fluid to the hollows therein, said fluid passing through the mentioned apertures directly to the shearing points between said ribs and said blades.

5. In a device of the character described, a pair of hollow stator members, and a rotor positioned therebetween for inducing a flow of a liquid mass between inwardly directed surfaces of said stator members, a set of blades on each side of said rotor, each set of blades being directed towards one of the mentioned stator surfaces to shear the liquid mass passing therebetween, said inwardly directed stator surfaces being apertured for passage therethrough of a fluid circulating in the mentioned hollow stator members, the fluid passing through the apertures being directed at the shear points between each set of rotor blades and its related stator surface.

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